USER MANUAL

DD 1535 R

V 1.3

Order No. 9103-0321

Welcome.

We are delighted that you have decided to purchase a **T+A** product. With the addition of the digital surround decoder to your **T+A** Hi-Fi system you are expanding it to embrace a completely new dimension: **Audio-Vision**.

With the digital surround decoder you can play Dolby Surround, Dolby Digital [1)] and dts [2)] encoded television programmes, video films and DVDs and experience a genuine "live" atmosphere, complete with exciting sound effects. The digital surround decoder is also capable of generating artificial sound fields, which enhance the apparent reality of non-encoded programme material. For example, if you are watching a sports programme, you can allow yourself to be transported into the stadium, or listen to a jazz concert in an authentic simulation of the atmosphere of a typical jazz club.

Of course, it is essential that all these new facilities should have no detrimental effect on the excellent sound qualities of your Hi-Fi system, and the design of your new machine has been carefully thought-through from start to finish to ensure that this is the case.

As you would expect, the digital surround decoder features five high-quality output stages of discrete construction, offering outstanding sound characteristics and generous reserves of power, and they can cope with impedance-critical loudspeakers and complex surround effects covering a very wide dynamic range without turning a hair. The unit includes a high-precision digital signal processor which is responsible for precise decoding of the surround material as well as generating the sound fields.

Naturally, we have remained faithful to our basic design and manufacturing principles in developing the digital surround decoder. This design philosophy includes an insistence on durability and reliability, the avoidance of materials which are environmentally harmful, the use of metals instead of plastics, and the exclusive exploitation of high-quality, thoroughly tested materials. To ensure consistently high product quality we subject everything we make to a comprehensive monitoring process, terminating in a fully automatic computer-controlled final quality check and acceptance procedure.

Optional accessories for this unit include high-quality cables and connectors, together with a range of specialised furniture designed to match the design of our equipment.

We have gathered some basic information on the subject of surround sound and video connections in the sections '***Surround systems - explanatory notes***', '***Loudspeaker configuration for the DD 1535 R***' and '***Picture norms, connecting AV devices to the DD 1535 R***'. If you are not familiar with these subjects, please read these sections first, as they will help you understand how to install and operate the equipment.

We are grateful to you for placing your faith in us, and hope that you will enjoy many hours of pleasure with your **T+A** digital surround decoder.

Note:
The **DD 1535 R** is designed specifically for use with a **T+A** R-series stereo pre-amplifier, amplifier or receiver with an **R LINK** socket!

T+A elektroakustik GmbH & Co KG

1) Manufactured under licence from Dolby Laboratories. "Dolby","Pro Logic", "Surround EX", and the double-D symbol are trademarks of Dolby Laboratories.

2) "dts" is a trademark of Digital Theater Systems, Inc.

CE All components used in this device meet the current German and European safety norms and standards. For your own safety please be sure to read right through these operating instructions. It is especially important to observe the instructions regarding setting up and operating the equipment, and the safety notes.

Contents

Operation

Front panel controls 4
Remote control 8
Menu control system 10
Main menu 11
System Configuration 15
- Configuration menu 16
- Loudspeaker menu 17
  - Loudspeaker size menu 18
  - Loudspeaker position menu 21
  - Loudspeaker balance menu 22
  - Tone adjust menu 23
  - Auto-Setup 24
- Video Inputs menu 25
- YUV Inputs menu 26
- Sound Inputs menu 27
- Special Functions menu 28

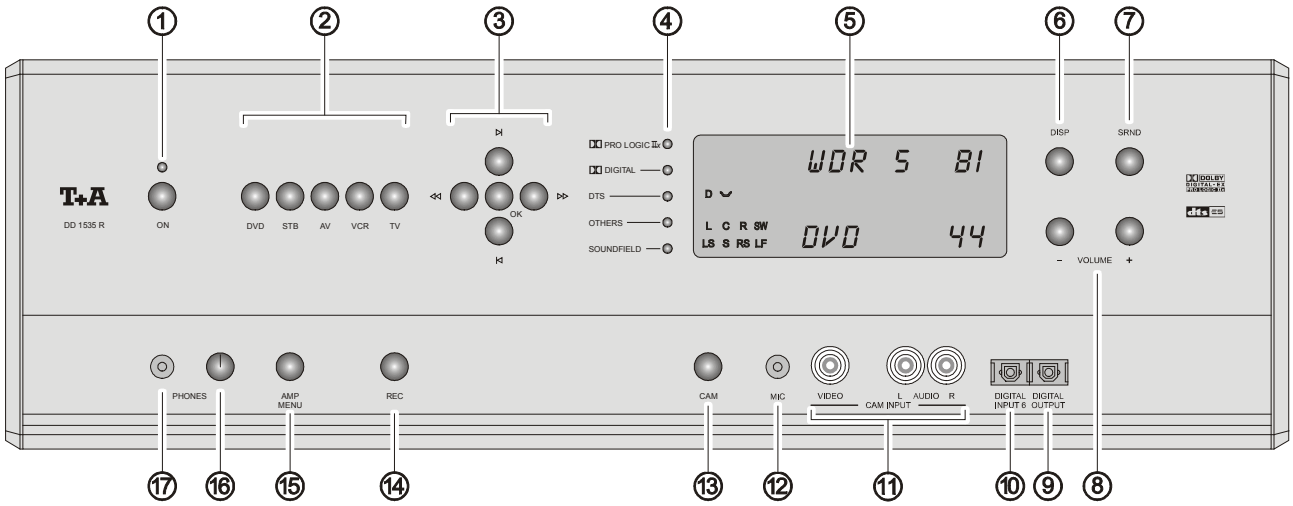
Connections, using the unit for the first time

Back panel connections 30
Safety notes 33
FCC Information to the user 34
Installation, using the surround receiver for the first time 35
Wiring diagrams
1. Connecting the decoder to a **T+A** pre-amplifier 38
2. Video monitor with additional Component input 41
3. Connecting a DVD/CD player (digital picture source) 42
4. Connecting a DVD player with YUV Component Video output to the **DD 1535 R** 45
5. Connecting a set-top box (digital sound and picture source) 46
6. Connecting an analogue recorder 48

Miscellaneous

Optimising the system 49
Surround systems - explanatory notes 50
Loudspeaker configuration for the **DD 1535 R** 56
Picture norms, connecting AV devices to the **DD 1535 R** 56
Additional YUV connection 57
Recording with the **DD 1535 R** 57
Trouble-shooting 58
Restoring the works default settings / Switching the remote control address 58
Glossary 61
Specifications 63

Front panel controls



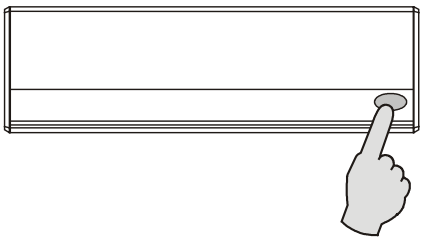
Opening and closing the flap

The flap is fitted with a snap closure.

To open the flap press lightly at the marked point; the flap will then spring open.

Never pull the flap – the snap closure will be damaged!

To close the flap raise it and press it lightly against the machine until the snap closure engages.



① ON

The decoder's mains On / Off switch.

- **Switching on and off**
  Pressing the mains button ON switches the decoder on and off. When the machine is switched on and ready to use, the green LED glows.
- **Standby and record ready mode**
  If you hold the ON button pressed in for about one second when the decoder is already switched on, the machine switches to stand-by mode. Video recorder recordings can be made with the unit in stand-by mode; the screen displays the recording source you have selected (see section **'VCR recordings using the digital surround decoder'**).

② AV source devices

(viewing and listening source)

DVD STB AV VCR TV

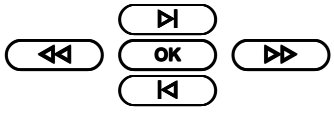
You can select one of the AV signal sources (**DVD**, **SETTOPBOX**, **AUX/AV1**, **AUX/AV2**, **VCR1**, **VCR2** or **TV**) as viewing and listening source by briefly pressing one of the **AV source device** buttons.

Press the appropriate source button repeatedly to switch between **VCR1** and **VCR2** or **AUX/AV1** and **AUX/AV2**.

Notes:

A form of surround sound can also be obtained with analogue audio devices which are connected to the stereo amplifier or receiver. Select the desired device on your stereo amplifier, and switch the system to Surround mode (SRND-button). The sound signals from the source are now automatically passed from the stereo amplifier to the **DD 1535 R** via the TASI interface, and can be reproduced using ProLogic, NEO:6 or a simulated sound field..

③ Cursor block **(multi-function buttons)**



These multi-function buttons are used to control all the menus, and also operate the tuner.

⏭ / ⏮	Select button (see section '***Menu control system***')
◀◀ / ▶▶	Change button (see section '***Menu control system***')
OK	Confirm button (see section '***Menu control system***')

④ Display of decoder mode

PRO LOGIC IIx

The decoder automatically switches to this mode for any **analogue stereo source** if it detects that the sound material is Dolby Surround encoded. For **digital stereo sources** or 2.0 programme material the machine **automatically** selects PRO LOGIC II if the recorded material permits it. The corresponding LED lights up.

Note:
The LED only glows if NEO:6 is not selected.

DIGITAL

The decoder **automatically** selects this mode if it detects at the input a digital multi-channel signal which is encoded using Dolby Digital. The corresponding LED glows.

Note:
Some Dolby Digital encoded CDs contain sound signals encoded with Dolby Surround. The decoder automatically detects this, and uses Dolby Pro Logic II or NEO:6 for playback.

The decoder **automatically** selects this mode if it detects at the input a digital multi-channel signal which is dts encoded. The corresponding LED lights up.

OTHERS

This display is provided for possible expanded functions which may be developed in the future.

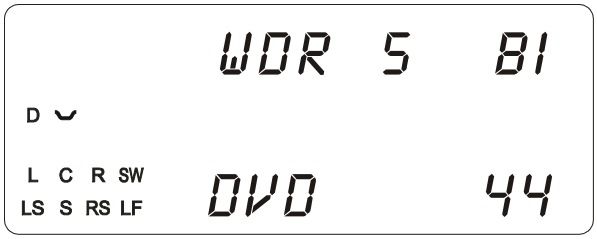
SOUND FIELD (simulated sound fields)

You can switch on this mode **manually** whenever you wish to generate a simulated sound field to give spatial effects to any stereo source material. The corresponding LED lights up.

Note:
With 96 kHz encoded programme material the only operating modes possible are: Stereo, Mono, Mono 1, Mono 2 and Disco; see '***Main Menu***'.

⑤ Integral screen

The display elements of the digital surround decoder are grouped together in a clearly laid out screen:



a	Alpha-numeric display field. Context-sensitive messages are displayed here, e. g. when using the Setup menus.
b	Alpha-numeric display area for showing pre-amplifier and decoder messages (source device, volume etc.).
D	**Digital input** The assigned digital input is switched on.
◡	**Loudness** The volume-dependent tone control is switched on - see (LOUDN) button.

The symbols listed below light up if the input signal contains information on the corresponding surround channel, and a loudspeaker has been assigned to this channel in the '***Loudspeaker Menu***'.

L	Main speaker, front left
C	Centre speaker, front centre
R	Main speaker, front right
LS	Surround speaker, left
S	Left and right back loudspeaker
RS	Surround speaker, right
LF	**L**ow **F**requency Effects channel (low bass channel / subwoofer)

(LOUDN) on the T+A stereo amplifier

Toggles volume-dependent tone correction (**LOUDNESS**) of the **DD 1535 R** on and off. The display area of the decoder always shows the current status briefly in text form; the ◡ symbol in the display window is the permanent indicator that loudness is switched on.

(FLAT) on the T+A stereo amplifier

In surround mode switches the tone controls of the **DD 1535 R** on and off.

The display area of the decoder always shows the current status briefly in text form. The disabled tone control is indicated by the **=**-symbol.

(SP A) on the T+A stereo amplifier

In surround mode also switches the loudspeaker outputs of the **DD 1535 R** on and off.

⑥ DISP — Adjusting screen brightness

The brightness of the alpha-numeric lines of the screen can be set to suit your personal preference by repeatedly pressing the DISP button. Three brightness levels are available:

1. Normal setting: DISP NORM
clearly legible, even in sunlight

2. Darker setting: DISP SOFT
subdued setting, for dark locations

3. Display off: DISP OFF
the screen is completely switched off

If you set brightness level **3**, the screen switches briefly to normal brightness every time you give a command, so that you can check the settings easily even from a distance. After about four seconds the screen automatically switches back to your preferred brightness level. If you change the brightness level, this also means that the new value only becomes effective after about four seconds.

⑦ SRND

If Loudspeaker A is on:

Switches from surround mode to stereo mode and vice versa.

If Loudspeaker A is off:

Briefly pressing the SRND button displays the current Dolby Headphone mode. Every time you press the SRND button again, you cycle through to the next Dolby Headphone room type ('PH DH-1', 'PH DH-2', 'PH DH-3').

Holding the SRND button pressed in switches back from the Dolby Headphone room types to stereo mode ('PH STEREO').

For more information on Dolby Headphone please see the section entitled '***Dolby Headphone***'.

⑧ – VOLUME +

The decoder features a digital volume control: every time you press one of the volume buttons the volume increases VOL + or decreases VOL - by 1.5 dB.

If you hold one of the volume buttons pressed in for longer than a second, the volume continues to rise or fall until you release the button again.

The screen displays 'VOLUME' briefly.

Note:

The volume and tone controls of the decoder are completely independent of the corresponding controls on your T+A stereo pre-amplifier. This allows you to select the optimum volume setting for each mode.

⑨ DIGITAL OUTPUT

Digital recording output (optical), designed for connecting a digital recorder temporarily (e. g. for transferring material to a portable MD recorder).

The signal of the source you last listened to is present at this output as a stereo signal (also where the input signal is Dolby Digital or dts). Dolby Headphone mode must be switched off during the recording.

⑩ DIGITAL INPUT 6

Digital input (optical), designed for connecting a digital sound source (e. g. MD recorder) temporarily.

⑪ CAM INPUT (VIDEO and AUDIO CINCH)

Video input and stereo sound input for temporary connection of an additional AV source device (e. g. camcorder).

⑫ MIC

This socket is for the measuring microphone when you are using an automatic loudspeaker calibration process (see the section entitled '***Auto Setup***').

⑬ CAM

Source select button for the CAM input.

⑭ REC — (Select recording source)

Hold the REC button pressed in to switch recording sources; briefly pressing a source button (DVD, TV, ...) then selects the recording source you wish to use. The current recording source is displayed on the screen while you press the button.

For more information on recording, especially in Multi-Room mode, please read the chapter '***Recording with the SR 1535 R***'.

⑮ AMP MENU (Amplifier Menu)

- **Opening the '*Main Menu*'.**
  Pressing this button **briefly** opens the **'*Main Menu*'**. This is where you can change the surround receiver settings which are only occasionally required in normal daily listening: perhaps to allow for temporary changes in the listening room, or to compensate for unusual characteristics of a special listening source (see **'*Main Menu*'**).
- **Opening the 'Configuration Menu'.**
  Holding the SETUP - button **pressed in** for about one second opens the **'*Configuration Menu*'**. This menu contains the settings and decoder functions which are rarely needed, such as level and tone adjustments. Dedicated buttons for functions of this sort are not present, as it is important that the front panel should be uncluttered. (see **'*Configuration Menu*'**).

⑯ PHONES (headphone volume control)

In normal use the headphone volume knob is recessed into the front panel. If you press the knob once, it extends from the front panel and can then easily be rotated.

You can now adjust the volume of the headphones independently of the loudspeaker output stages.

When you are satisfied with the level, push the knob back into the front panel under light pressure. It will automatically engage in the recessed position.

⑰ PHONES (headphone socket)

Socket for stereo headphones with a 3.5 mm Ø barrel plug and an impedance of at least 50 Ω. The **DD 1535 R** features a separate high-quality headphone amplifier, independent of the loudspeaker output stages.

Note:

If the loudspeakers are switched on, the headphones always supply a STEREO signal, regardless of the selected mode of operation.
If the loudspeakers are switched off, a simulated surround signal (DOLBY Headphone) is available at the headphone output if a surround mode is selected.

VCR recordings with the DD 1535 R

The overall design of the **SR 1535 R** enables you to select an recording source regardless of the viewing / listening source currently selected.

This facility make it possible to record one AV source device (e. g. SAT receiver), while you simultaneously view and listen to another AV source device (e. g. DVD player).

If you wish to make a timer-controlled VCR recording, you must first select the appropriate recording source (e. g. SAT receiver).

At the time the recording is to take place, the decoder must not be completely switched off (i. e. it must be switched on or in stand-by mode).

In stand-by mode the decoder confirms its actions by displaying the selected recording source on its screen in dimmed form: **'REC'** and source name.

Automatic power-off:

Normally the decoder switches itself off in parallel with the master device. If the system is switched to stereo mode, the screen shows:

'PREAMP'

After two minutes in stereo mode the decoder automatically switches to stand-by mode, as it is redundant in stereo mode.

You can switch on the decoder again at any time by pressing the SURROUND button briefly; it then reverts to stereo mode.

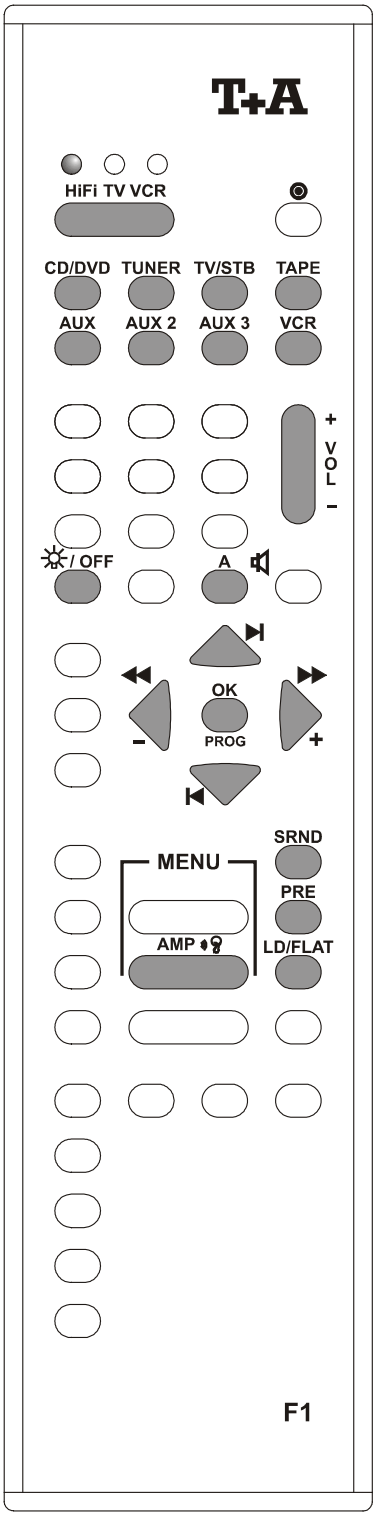
Remote control of the Surround Decoder

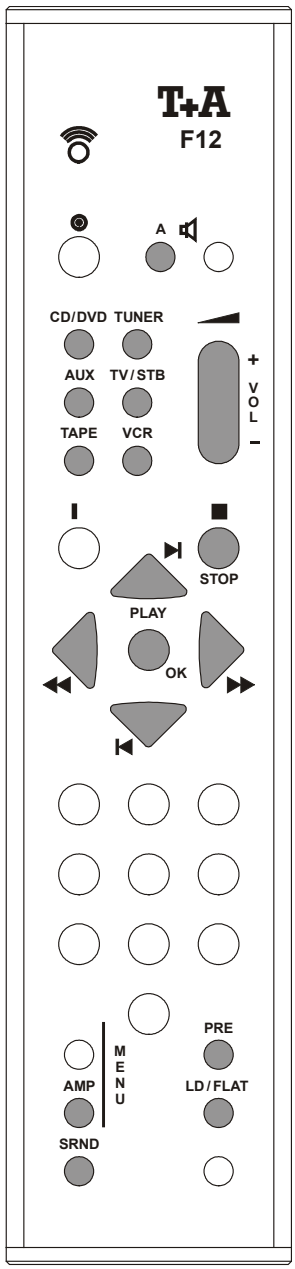
General information

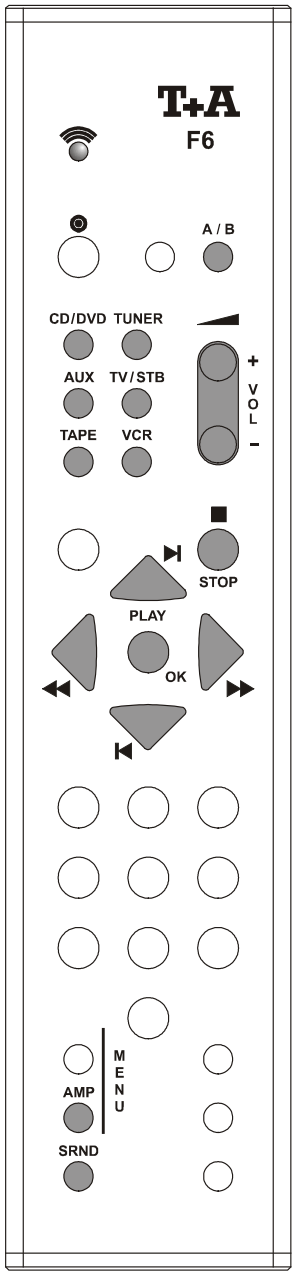
The digital surround decoder can be controlled using the **F6**, **F12** remote control handset, or the **F1** system remote control unit. If you are using the **F1** handset, it must first be switched to Hi-Fi mode.

The decoder receives its remote control commands via the **R**LINK master device. Press the SRND button to switch it on; it switches itself off when the Master device is turned off.

In the drawings some of the buttons are filled in ( ); these are the ones which are required for remote control of the decoder. The other buttons have no effect on this unit.







F1	F12	F6	
HIFI TV VCR			Switch the handset to Hi-Fi mode.
CD TUNER TV TAPE 1 TAPE 2 AUX1 AUX 2 AUX 3	CD / DVD TUNER TV / STB TAPE VCR AUX	CD / DVD TUNER TV / STB TAPE VCR AUX	Source select button Switches between CD input (on the stereo amplifier) and DVD input on the **DD 1535 R** Selects the tuner input (stereo amplifier) Switches between TV and STB input Selects TAPE 1 on the stereo amplifier Switches between TAPE 2 / VCR 2 and VCR 1 inputs Switches between the AUX inputs on the stereo amplifier and the AUX/AV inputs on the **DD 1535 R**
VOLUME	VOLUME	VOLUME	Volume control rocker
A	A	A / B	**Switches all loudspeaker outputs on and off alternately.**
OFF			**Switches all loudspeaker outputs off.**
SRND	SRND	SRND	Switches between surround mode and PRE AMP mode (stereo mode)
PRE	PRE		<u>Brief press in surround mode</u> Switches over to stereo mode
LD / FLAT	LD / FLAT		Toggles volume-dependent tone correction (**LOUDNESS**) on and off. The display area of the decoder always shows the current status briefly in text form; the ∪ symbol in the display window is the permanent indicator that loudness is switched on. The Loudness function can be operated using the LOUDN button on the stereo amplifier.
LOUDN	LD / FLAT Short press		Switches LOUDNESS on and off
FLAT	LD / FLAT Long press		Switches FLAT mode on and off
⏭ ⏮	⏭ ⏮	⏭ ⏮	**Select button** in the decoder's menu control system
◀◀ ▶▶	◀◀ ▶▶	◀◀ ▶▶	**Change button** in the decoder's menu control system
OK	OK	OK	Confirmation button **in the decoder's menu control system**
AMP	AMP	AMP	<u>Call up menu function</u> Brief press: **'*Main menu*'** Long press: **'*Configuration Menu*'** <u>during menu control processes</u> closes the menu

Menu control system

To keep the control panel of the digital surround decoder as compact and uncluttered as possible, the panel does not include dedicated buttons for controlling the decoder functions of tone and level adjustment directly; instead a menu control system (**'*Main Menu*'**) is used.

The **'*Main Menu*'** contains all the functions you will need for everyday use of the decoder. You can call it up at any time by briefly pressing one of the remote control buttons AMP or , or the AMP MENU button on the front panel of the decoder.

When you install your surround system, it is important to set up all the audio and video components and adjust them to match each other correctly, and to match the acoustic qualities of your listening room. These tasks are carried out in the **'*Configuration Menu*'**.

If a television is connected to the decoder, all the menus are displayed page by page on the television screen; at the same time they are displayed line by line on the decoder's integral screen.

The following table shows how the menu control system is operated using the remote control buttons, or the buttons on the decoder's front panel.

Open Configuration Menu (hold button pressed in)		
F6/F12	**F1**	**Front panel**
AMP		AMP MENU

Open Main Menu (press button briefly)		
F6/F12	**F1**	**Front panel**
AMP		AMP MENU

Closing the menu		
F6/F12	**F1**	**Front panel**
AMP	AMP	AMP MENU

Select buttons		
F6/F12	**F1**	**Front panel**
/	/	/

Change buttons		
F6/F12	**F1**	**Front panel**
/	/	/

Confirmation buttons		
F6/F12	**F1**	**Front panel**
OK	OK	AMP MENU

- The **select** buttons are used to move to the input positions provided.
- The **change** buttons alter the value at the input position.

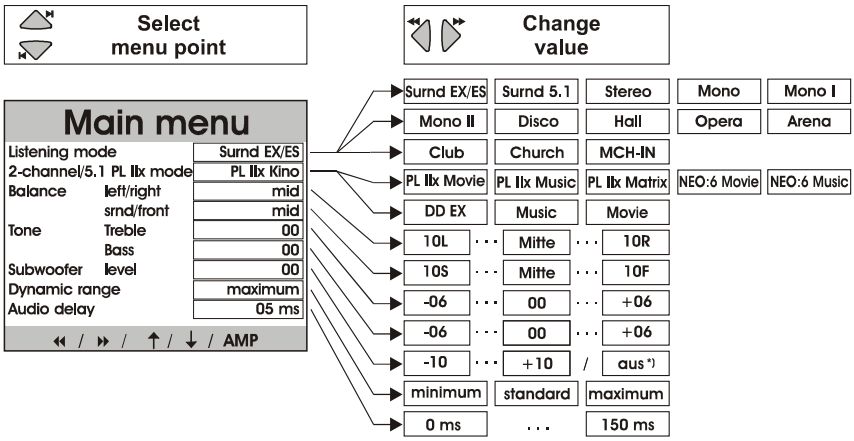
All menus are displayed page by page on the screen of a television connected to the system, as well as line by line on the machine's integral screen.

The following description of the menu points provides details of the adjustment facilities and their effects.

Main Menu

The '***Main Menu***' is designed for adjustments to the decoder which are only occasionally required for daily listening; perhaps to allow for temporary changes in the listening room, or to compensate for unique characteristics of a special listening source.

To open the '***Main Menu***' press the remote control button AMP or briefly, or the AMP MENU button on the decoder's front panel.



Listening mode:

At this menu point you can select the decoder's playback mode or sound field which you wish to use. **The decoder 'remembers' your chosen setting for each input (DVD, CD, Tuner, ...), and selects it every time you switch to that input.**

Surnd EX/ES (Dolby Digital EX / DTS ES decoder version). The DTS ES and Dolby Digital Surround EX **digital** multi-channel signals are detected and decoded. The surround channels are reproduced by the surround loudspeakers and one or two rear loudspeakers (6.1 / 7.1 mode).

Surnd 5.1 (Dolby Digital EX / DTS ES decoder version) The DTS and Dolby Digital **digital** multi-channel signals are automatically detected and decoded. The surround channels are reproduced by two surround loudspeakers (5.1 mode).

Stereo Even if a multi-channel signal is detected, the decoder converts it into a stereo signal, i. e. all channel information is mixed down and sent to the main left and right loudspeakers.

Mono All channels are mixed down onto the center loudspeaker channel.

Mono I Mode for two-channel TV sound
Generally **Channel I** transmits the synchronised sound. The signal from Channel I is reproduced via the Centre loudspeaker *); **Channel II** (original sound) is suppressed.

Mono II Mode for two-channel TV sound
Generally **Channel II** transmits the original sound. The signal from Channel II is reproduced via the Centre loudspeaker *); **Channel I** (original sound) is suppressed.

Notes:

*) If no Centre speaker is present (see '***Loudspeaker Menu***'), the Centre channel is mixed onto the left and right main speakers.

Not all signal sources (DVDs, CDs etc.) which are encoded with Dolby Digital or dts Digital Surround always contain information on all channels. Even if the screen indicates that a particular channel is present, this does not necessarily mean that the loudspeaker in question will always produce sound.

In every playback mode signals may be present on the subwoofer channel; this depends on the loudspeaker arrangement you have selected in the '***Speaker Setup***'.

Sound fields:

Disco This sound field is particularly suitable for providing an even spread of sound over a dance area. The sound signal is reproduced with equal power by the main and surround loudspeakers, without echo or delay. The strongly concentrated sound reproduction generates an immediate, energy-charged atmosphere which is a great choice for any party.

Hall Reverberant concert hall with sound reflections from all directions. Ideal for playing back recordings of large orchestras, or simulating the live atmosphere of a large rock concert hall - an excellent choice for very dynamic rock music.

Theatre This program combines clear voice reproduction with the full sound of an orchestra, but without exaggerated reverberation. The spatial sound towards the rear is slightly limited, in the interests of better orientation.

Stadium This sound image concentrates the "presence" in the front area, helping to localise commentators and dialogues on the screen. Sound from the rear is designed to give the impression of being amongst the spectators in the stadium. This sound field is also suitable for TV shows and music programmes.

Club The characteristic atmosphere of a cellar jazz club, with a pattern of reflections dominated by large floor and wall surfaces. Also good for simulating small halls.

Church Simulation of the acoustic conditions in a large church, with long reverberation times. This sound field is an excellent choice for sacred organ music.

MCH-IN

If the MCH-IN input is assigned to the active source. In this case the sound signal of the Multi-channel input is used.

2-Channel Mode / 5.1 PL IIx Mode:

This menu point enables you to select the decoder for 2-channel input signals (e. g. from stereo sources). The Dolby Pro Logic II(x) process is available in three different configurations (see also **'Surround systems - explanatory notes'**).

Dolby Pro Logic II

Movie	for films
Music	for music
Matrix	for mono programme material

The **Dolby Digital EX / DTS ES decoder** also understands the DTS Neo:6 process.

DTS NEO.6

Movie	for films
Music	for music

The **Dolby Digital EX / DTS ES Decoder** allows the configuration of the **Pro Logic IIx** decoder for multichannel-signals, when back-speakers are available.

5.1 PL IIx Mode

Movie	für films
Music	für music
DD EX	for Dolby Digital EX coded material

Note:
The selection ‚**DD EX**' is normally not necessary. In contrast to **Dolby Digital EX** the **Dolby Pro Logic IIx** creates two back-channels instead of one. Only if the back-channels of Dolby Digital EX coded material is reproduced diffusely or nervously, this option may be helpful.

Balance left/right and front/surround:

These two menu points allow you to set a temporary change in the balance between the left/right and front/rear loudspeakers, in order to compensate for a temporary listening position which is less than perfect. You can alter the balance in 1 dB increments, and the current value is displayed in the following form:

10L (left) . . . . . **10R** (right)

10R (surround) . . . **10F** (front)

Center (neutral position)

Note:

It is important to start by setting the correct balance for the "standard" listening position, adjusting the volume of the front, surround and center channels. This task is carried out in the **'*Speaker Balance Setup*'**.

Tone: treble and Tone: bass:

These two menu points allow you to set a temporary change in the treble and bass settings in order to compensate for tonal differences in the recorded material. The setting affects all channels, and the range of adjustment is +/- 6dB in 1 dB increments. The current value is displayed on the screen; 00 dB means **'Linear setting'**.

Note:

It is important to start by establishing the correct tone settings for your room, to allow for imperfect loudspeaker positioning or room influences. This task is carried out in the **'*Tone Control Menu*'.**

Subwoofer level:

If you switch on the subwoofer in *the* **'*Speaker Setup*'**, in this menu point you can adjust its level within the range -10 (dB) to +10 (dB) in order to match its volume to the acoustic conditions in your listening room, and to match the volume of the other channels.

If the subwoofer is switched off in the **'*Speaker Setup*'**, this menu point in the **'*Main Menu*'** shows **off**. You cannot adjust the subwoofer level in this situation.

Note:

It is important to start by setting the correct balance between the other channels (front, rear and center). This task is carried out in the **'*Speaker Balance Setup*'**.

Dynamic range:

The dynamic range is the difference in volume between the quietest and loudest passages of a recording. The original sound track of a film usually features a very wide dynamic range, and the decoder is capable of reproducing the full range.

Unfortunately not every listening room can cope with the full dynamic range which the decoder is capable of reproducing. You also have to consider your neighbours, especially in the late evening.

To cope with these problems it is possible to reduce the dynamic range of Dolby Digital encoded sound material in three stages. The result is that quiet passages (e. g. low-level conversations) are reproduced slightly louder when the volume is set low, whereas loud passages (e. g. gigantic explosions) are slightly reduced in volume.

The following dynamic ranges are available:

standard highly compressed dynamic range, e. g. for playing at night-time.

high standard setting, moderate compression of dynamic range.

full exploits the full dynamic range which the sound source makes available.

Note:

Any adjustment to the dynamic range only affects Dolby Digital encoded sound sources.

Sound Delay:

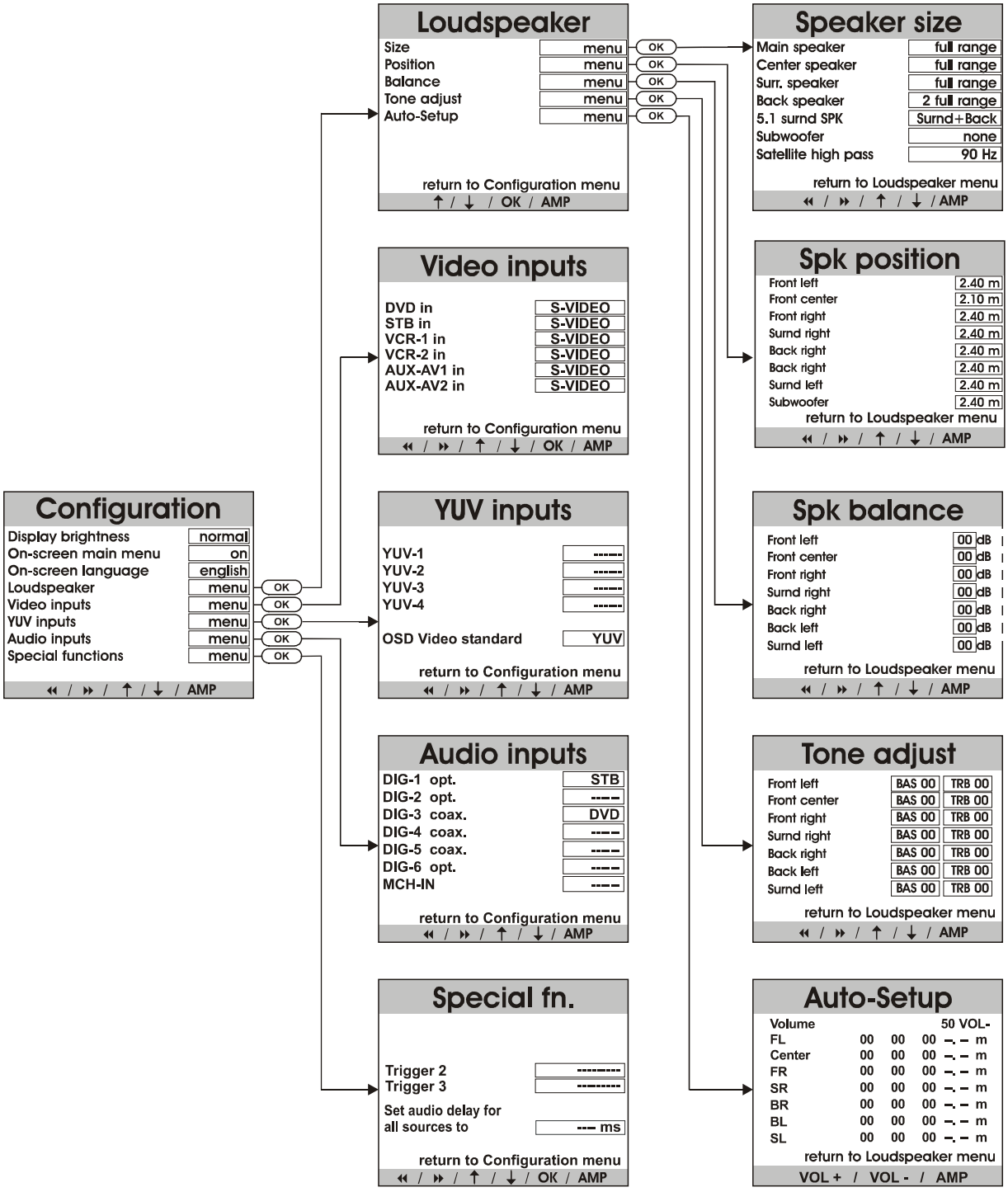
Some video monitors - especially 100 Hz types, plasma monitors and monitors with progressive scan function - create a delay in picture reproduction. In such cases the result may be poor synchronisation between sound and picture. Since certain source devices employ different picture transfer processes (analogue, progressive, SDI, HDMI), the sound delay may also be due to the source device.
In the menu point Sound Delay you can set a delay for sound reproduction within the range 0 … 150 ms in order to correct the synchronisation between sound and picture ("lip synchronisation"). This value can be set separately for each source device (see also the 'Special Functions' menu for a simplified method of setting the basic value).

System Configuration

In the '***Configuration***' you can adjust the settings for all the audio and video components of your surround system so that they match each other perfectly, and at the same time set them to suit the acoustic characteristics of your listening room.

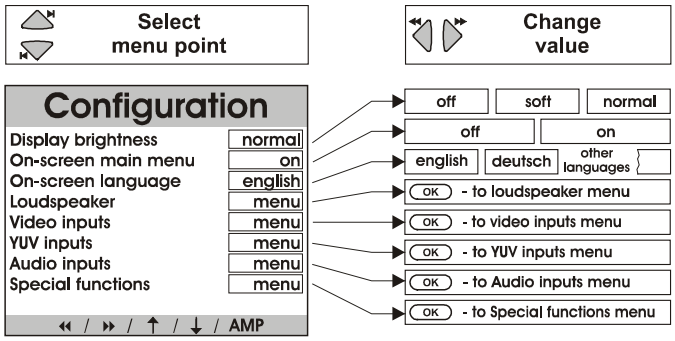
This procedure only needs to be carried out when you are installing the system, or when you are adding or replacing individual components of the system. The following diagram shows the menu structure.

Overview of 'Configuration Menu'



Configuration

You can call up the **'Configuration'** menu by pressing the remote control button AMP or , or the AMP MENU button on the front panel of the decoder; in either case hold the button pressed in for about two seconds.



Display brightness:

The brightness of the screen can be set to suit your personal preference. Three brightness levels are available:

off the screen is completely switched off.

soft subdued setting, for dark locations.

normal clearly legible, even in sunlight.

If you set brightness level **'off'**, the screen switches briefly to normal brightness every time you give a command, so that you can check the settings easily even from a distance. After about four seconds the screen automatically switches back to your preferred brightness level. If you change the brightness level, this also means that the new value only becomes effective after about four seconds.

Switching the on-screen main menu on and off:

If you just wish to make a temporary change to the balance or tone, it is not absolutely necessary to call up the **'*Main Menu*'** on the television screen and superimpose it on what you are watching; in most cases the display on the decoder's screen is quite adequate. At this menu point you can switch the TV on-screen main menu display on and off.

off The **'*Main Menu*'** appears line by line on the decoder's screen, but not on the TV screen.

on The **'*Main Menu*'** appears on the TV screen and also line by line on the decoder's screen.

On-screen language:

The on-screen menus can be displayed on the TV screen in different languages. Here you can select your language.

Loudspeaker:

The **'*Loudspeaker Menu*'** provides the means to balance the output signals to the loudspeakers in your surround system. At the same time you can adjust the output of the speakers accurately to suit the acoustic and spatial characteristics of your listening room.

Video inputs:

In the **'*Video inputs Menu*'** you can set the correct picture norm to match the picture sources connected to all the decoder's video inputs and outputs.

YUV inputs:

Many source devices feature a high-quality Component (YUV) picture output. If you wish to use this, the source device must be assigned to the YUV input of the **DD 1535 R** in the **'*YUV Inputs menu*'**.

Audio inputs:

The **'Sound Inputs Menu'** is used to integrate the AV sources connected to the decoder in the overall control system of an **'R'**-system. This is achieved by first assigning a name to each AV source device connected to the decoder; it will then appear under this name on the decoder's integral screen. You can then select the **Audio / Video input socket(s)** to which it is connected. Finally a **source button** on the remote control handset can be assigned to each AV source, which is then used to select it in **surround mode**.

Special functions:

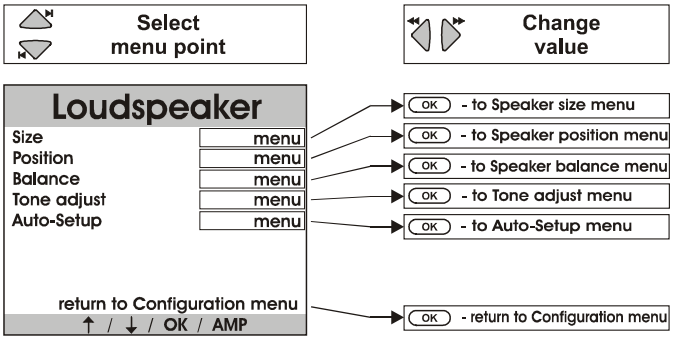
Menu for assigning the high-quality Component Video picture inputs (YUV) to the source devices.

Speaker Setup

In the **'*Loudspeaker Menu*'** you can branch off to the menus for setting the loudspeaker size, loudspeaker position, loudspeaker balance and the individual tone settings for each separate loudspeaker.

The three last menu points enable you to adjust the loud-speakers accurately to suit the acoustic and spatial characteristics of your listening room.

Adjustments should only be made to these settings when you are installing the system, if you are adding, replacing or moving individual loudspeakers, or if the acoustic conditions in your listening room are changed (e. g. changes to the furniture, carpets, curtains etc.).



Speaker size:

Activating this menu point leads to a menu in which you can determine the size of the loudspeakers and the sub-woofer mode. Here you can also select the transition frequency for satellite / sub-woofer mode. This ensures that all the loudspeakers are fed only the frequency range which they can actually reproduce.

You can also select at this point whether the surround channels of 5.1 input signals are only to be reproduced by the surround loudspeakers, or by the back loud-speakers, or both (see **'*Speaker size menu*'**).

Speaker position:

Activating this menu point leads to a menu in which you can determine the loudspeaker positions. Here you can enter the correct distance from each loudspeaker to the listening position. This compensates for delay dis-crepancies caused by differences in speaker distance from the listening position (see **'*Speaker position menu*'**).

Speaker balance:

Activating this menu point leads to a menu in which you can set the level balance between all the loudspeakers (see **'*LS balance menu*'**).

Tone controls:

Activating this menu point leads to a menu in which you can adjust the tonal balance of the loudspeakers (see **'*Tone controls menu*'**).

Auto Setup

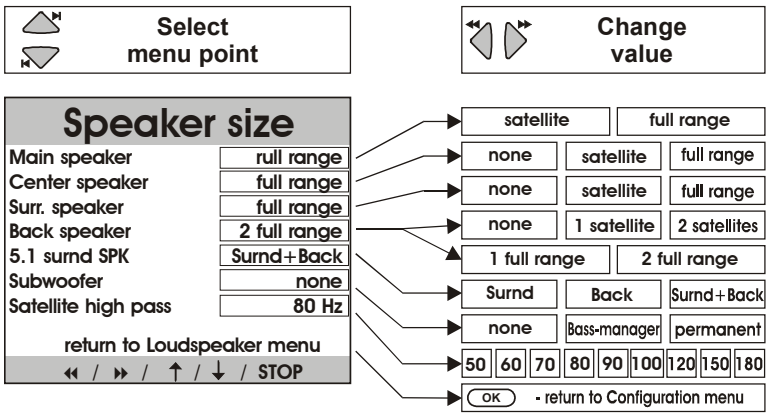
The menu point **'Auto *Setup*'** represents an alternative to setting up the loudspeaker parameters manually, using the **'*LS Balance*'** menu. Calling up the Assistant initiates an automated routine for setting the correct volume, tone setting and position of the individual loudspeaker channels in your surround system.

Speaker size menu

In the '***Speaker size menu***' you initially adjust the output signals to suit the existing loudspeaker system.

To avoid the loss of any sound information in systems where not all the loudspeakers (centre, rear and sub-woofer) are present, the missing components must be marked as **none** in the '***Speaker size menu***'.

The corresponding sound signal is then distributed over the channels which are present (**Downmix**).



Main speaker:

Defines the size and bass capacity of the main left and right front loudspeakers. Select one of the following settings:

Satellit for small speakers whose bass reproduction is necessarily restricted. The low bass content (below the set transition frequency) of the main channel signals is mixed down onto the subwoofer, if present.

full range for larger speakers. The full frequency range is passed on to the main speaker channels without restriction.

Center speaker:

Defines the size and bass capacity of the center speaker. Select one of the following settings:

none if no center loudspeaker is present. The center channel is mixed down onto the left and right main loudspeakers.

Satellit for small centre loudspeakers. The low frequency bass signals of the centre channel (below the set transition frequency) are mixed onto other suitable loudspeakers and, if present, the sub-woofer.

full range for a center speaker of about the same size as the main loudspeakers. The full frequency range is passed on to the center channel without restriction.

Note:

If your system does not include a center speaker, the main loudspeakers should be set up not too far away from the TV set, and ideally should be arranged symmetrically about it, otherwise it will be very difficult to localise dialogues on the television screen.

Surround speaker:

Setting the size and bass capability of the surround loudspeakers. Select the settings as follows:

none if no surround loudspeakers are present. The surround channels are mixed down onto the left and right main loudspeakers.

Satellit for small surround loudspeakers. The low frequency bass signals of the surround channels (below the set transition frequency) are mixed by the bass manager onto other suitable loud-speakers and, if present, the sub-woofer.

full range if the bass reproduction of the surround loudspeakers is very good. The full frequency range is reproduced by the surround loudspeakers without restriction.

Note:

Genuine surround reproduction is not possible without surround loudspeakers!

Back speaker:

Setting the size and bass capability of the back loudspeakers. The following settings are possible in each case for one (6.1 mode) or two (7.1 mode) rear loudspeakers:

none if no back speakers are present. The back channels are mixed onto the left and right surround loudspeakers.

Satellit for small back loudspeakers. The low frequency bass signals of the back channels (below the set transition frequency) are mixed by the bass manager onto other suitable loud-speakers and, if present, the sub-woofer.

full-range if the bass reproduction of the back speakers is very good. The full frequency range is passed on to the surround channels without restriction.

Notes:

If no back speakers are present, the surround mode **'Surnd EX/ES'** cannot be selected, and Dolby Digital Surround EX and DTS ES are reproduced as normal 5.1 sound.

If you select the setting **'**none**'** in the menu point 'Surround loudspeakers', the back loudspeakers are automatically switched off.

Not all combinations can be set; this is deliberate in order to avoid senseless settings.

5.1 Surnd LS

As described under **'Surround systems - explanatory notes'**, the recommended settings for 5.1 loudspeaker sets differ from those for 6.1 / 7.1 speaker sets. To achieve the correct surround effect the surround loudspeakers are located behind the listener for the 5.1 set-up, whereas they should be positioned more to the side of the listener with the 6.1 / 7.1 arrangement. For this reason it is possible to select here whether the surround information in the **'Surnd 5.1'** mode is to be reproduced by the surround speakers, the back speakers, or both.

Surnd only The surround signals are reproduced only by the surround loudspeakers.

Back only The surround signals are reproduced only by the back loudspeakers.

Surnd+Back The surround signals are reproduced by both the surround and the back loud-speakers.

Note:

If only one back loudspeaker is present, the **'Back only'** setting cannot be selected.

Subwoofer:

In this menu point you set whether a subwoofer is present in your loudspeaker system. Select one of the following settings:

Bass-manager recommended setting for sub-woofer / satellite systems.

If a sub-woofer is present. The signals of the bass effect channel (**LFE**), and all other low frequency bass signals (below the set transition frequency) which are not reproduced by the full-range loudspeakers, are passed to the sub-woofer channel. In this mode it may occur that the sub-woofer has no signal to reproduce in some surround modes or with multi-channel input signals which lack an LFE channel.

If the bass manager is in use, the low-pass filter on the sub-woofer should be switched off, as the bass manager carries out the filtering.

Permanent recommended setting for full-range loudspeakers and sub-woofer.

If a sub-woofer is present and you wish it to operate constantly. In addition to bass management the signals of all channels are mixed together and reproduced by the sub-woofer.

For constant sub-woofer operation the low-pass filter on the sub-woofer must be switched on and the transition frequency on the sub-woofer set in such a way that the sub-woofer only reproduces signals below the bottom transition frequency of the main loudspeakers (generally 30 - 40 Hz).

none if this setting is selected, at least the main loudspeakers must be full-range types.

If no sub-woofer is present. The signals of the bass effect channel (**LFE**) and all other low frequency bass signals (below the set transition frequency) are reproduced by the main loudspeakers.

Note:

Provided that you have **switched on** the subwoofer in the '***Speaker Setup***', then you can adjust its level in the '***Main Menu***' within the range -10 (dB) to +10 (dB), so that the volume of the subwoofer matches the volume of the other channels.

Satellite high pass:

Here the lower transition frequency for satellite speakers can be selected. The bass range below the frequency set here (for all loudspeakers whose size is set as 'Satellite') is mixed by the bass manager onto other suitable loudspeakers and the sub-woofer.

The following values (Hz) can be set:

50 **60** **70** **80** **90** **100** **120** **150** **180**

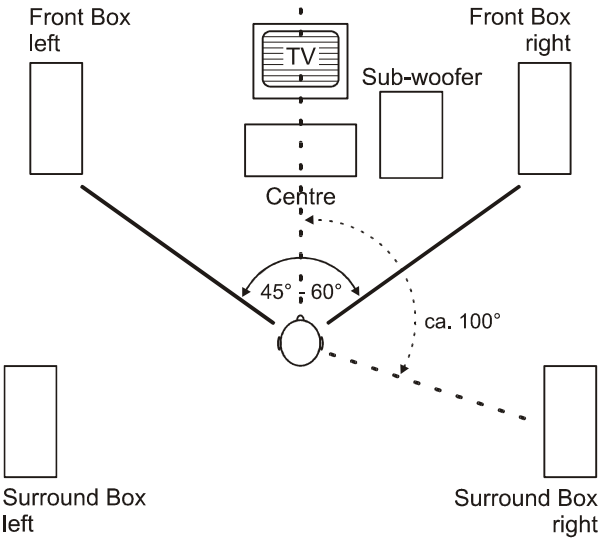
Speaker Position Menu

In the '***Speaker Position Menu***' you can enter the distance from the listening position (in 0.3 m increments) for each loudspeaker separately.

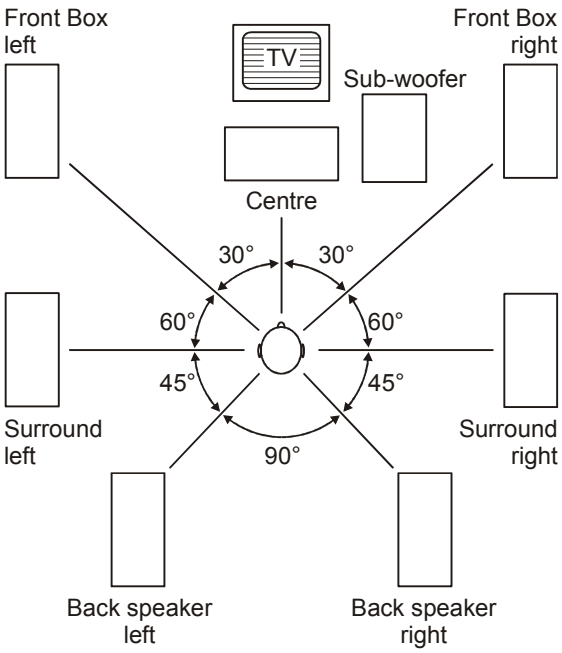
This enables the decoder to compensate for timing discrepancies due to differences in speaker location.

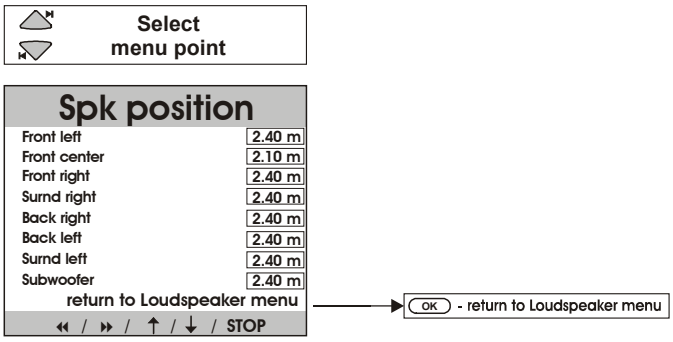
Recommended loudspeaker arrangement

5.1 Loudspeaker set



7.1 Loudspeaker set





Measure the distance between the listening position and the loudspeakers in your surround system, and enter the measured distances.

Note:

The maximum distance of a loudspeaker to the listening position is 12 m. For acoustic reasons greater distances cannot be recommended, and the system cannot compensate for timing errors over a range greater than 12 m.

As the illustration shows, you use the select buttons to move to the input positions in the following sequence.

Output channels not in use (see '***Loudspeaker Menu***') cannot be edited.

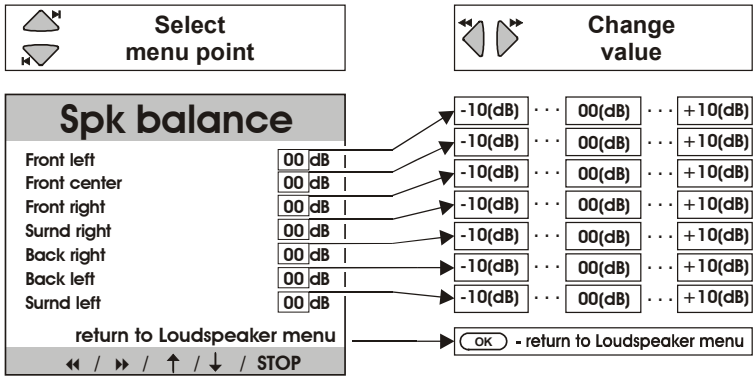
Use the change buttons to enter the measured distance in increments of 0.3 m.

- Main loudspeaker front left (**front left**)
- Center loudspeaker front center (**front centre**)
- Main loudspeaker front right (**front rear**)
- Surround loudspeaker right (**surnd right**)
- Back loudspeaker right (**back right**)
- Back loudspeaker left (**back left**)
- or back loudspeaker centre (**back centre**)
- Surround loudspeaker left (**surnd left**)
- Active subwoofer (any position) (**Sub**)

Speaker Balance Menu

To ensure that the decoder supplies a balanced sound image, the system allows you to adjust the volume of the individual channels to provide a harmoniously balanced arrangement.

The purpose of the **'*Speaker Balance Menu*'** is to adjust the level of all the channels.



When you activate the ***'Speaker Balance Menu'*** you will hear a hiss from the left main loudspeaker lasting two seconds. You will find the data input position after the first menu point.

e. g. 'Front left: 00 '.

The hiss is reproduced on all the channels in turn, in each case lasting for about two seconds.

As the illustration shows, the hiss is reproduced on all the channels in turn, in each case lasting about two seconds.

When the hiss is sounding on a particular channel, the on-screen menu indicates the corresponding input position. You can now alter the value within the range **–10** to **+10** using the change buttons. You can immediately hear the result of any change you make.

If you alter the volume, the hiss continues on that channel for a further two seconds before moving on to the next channel. The input position then changes accordingly.

You can override the automatic cycling process by selecting a particular channel using the select buttons; you can then adjust its level as you wish.

Take your time to set all the channels to give as even an impression of volume as possible!

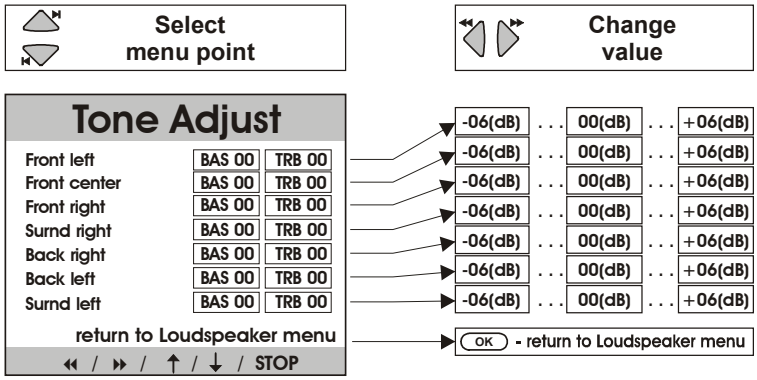
Note:
The hissing sound used for this is not suitable for assessing bass volume; the volume of the subwoofer channel can be adjusted in the menu point **'*Subwoofer level*'**, which is part of the **'*Main Menu*'**.

The levels you set for each channel are stored for use when the surround system has been selected, and applies to all surround modes.

Tone adjust Menu

The decoder features an active tone control system (+/- 6dB) whose purpose is to compensate for the unwanted influence on playback quality of your listening room, or of imperfect loudspeaker positions.

The treble / bass balance can be adjusted separately for all the output channels, and can therefore compensate for problems caused by the location of individual speakers.


Select
menu point
Change
value
Tone Adjust
Front left BAS 00 TRB 00
Front center BAS 00 TRB 00
Front right BAS 00 TRB 00
Surnd right BAS 00 TRB 00
Back right BAS 00 TRB 00
Back left BAS 00 TRB 00
Surnd left BAS 00 TRB 00
return to Loudspeaker menu
/ / / / STOP
-06(dB) ... 00(dB) ... +06(dB)
OK - return to Loudspeaker menu

The first step is to select a sound source which you wish to use as the basis for adjusting the tone controls. Make sure that the sound source you choose is active on all the channels, so that the sound image is typical of your listening habits, and any changes you make to the tone controls are immediately audible in that setting.

Once you have activated this section of the menu, you will find the data input position after the first menu point,

e. g. 'Front left BAS: 00 '.

You can now alter the value within the range **–06** to **+06** using the change buttons; any change you make is immediately audible.

Select the input position using the select buttons.

As the illustration shows, you can cycle through the input positions in the following order:

Output channels not in use (see '***Loudspeaker Menu***') cannot be edited.

Set values for treble **(TRB)** and bass **(BAS)** on all channels which gives as well-balanced a sound image as possible.

Note:

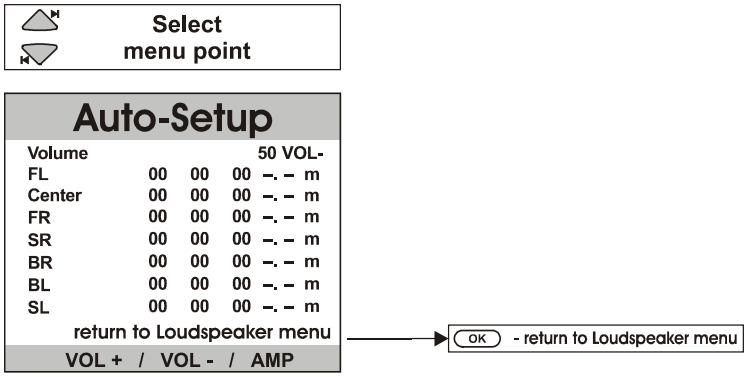
Adjusting the tone controls has an influence on the overall level of that channel. After making a change here we recommend that you call up the '***Speaker Balance Menu***' again so that you can check the balance of all channels and make corrections if necessary.

Auto Setup

T+A provides the Auto Setup system as an aid to setting up a surround system correctly. If you follow the steps described below, the **DD 1535 R** will carry out an automatic calibration of your loudspeakers with the help of the calibration microphone supplied with the set. Under normal listening room conditions this process reliably provides optimum results.

If the calibration process is to work properly the following conditions need to be fulfilled: an unobstructed location for the calibration microphone close to your preferred listening position (e. g. on the living room table, or on the backrest of an armchair), and direct visual contact between the microphone and each loudspeaker.

The first step is to connect the calibration microphone to the socket marked **'MIC'** on the front panel. Now set a normal volume for listening to the system.


Select
menu point
Auto-Setup
Volume 50 VOL-
FL 00 00 00 –.– m
Center 00 00 00 –.– m
FR 00 00 00 –.– m
SR 00 00 00 –.– m
BR 00 00 00 –.– m
BL 00 00 00 –.– m
SL 00 00 00 –.– m
return to Loudspeaker menu
VOL + / VOL - / AMP
OK - return to Loudspeaker menu

To ensure that the calibration can be carried out properly, the volume must first be set correctly. To this end the **DD 1535 R** generates a hiss signal on the front left channel. The screen displays the currently set volume value in the **'*Volume*'** line, followed by the button you need to press. **'VOL+'** means that the volume is too low; **'VOL-'** means it is too high. Only if the display shows **'OK'** can the calibration process be initiated by pressing the OK button.

The **DD 1535 R** now carries out the automatic calibration process. During the procedure you will hear your loudspeakers emit various test signals. During the period of the calibration procedure it is important that no loud extraneous sounds should occur, as these could falsify the results of the process.

The **'*Auto Setup*'** screen display on your TV set provides constant information about the settings the system has determined.

The first columns show the values determined for the set level corrections (volume compensation). The following two columns list the bass and treble settings, and the final column the loudspeaker distances.

Notes:

If the calibration process was adversely affected by extraneous noises, or if for any other reason the calibration process produces implausible results, note that the procedure can be re-started at any time.

The distances determined by the Assistant are calculated on the basis of acoustic delay times. They may be slightly different from the geometric distances due to signal delays in your loudspeakers.

If the automatic calibration procedure produces incorrect results due to difficult acoustic conditions in your listening room, we suggest that you should first attempt to achieve better results by varying the microphone position and / or the volume setting.

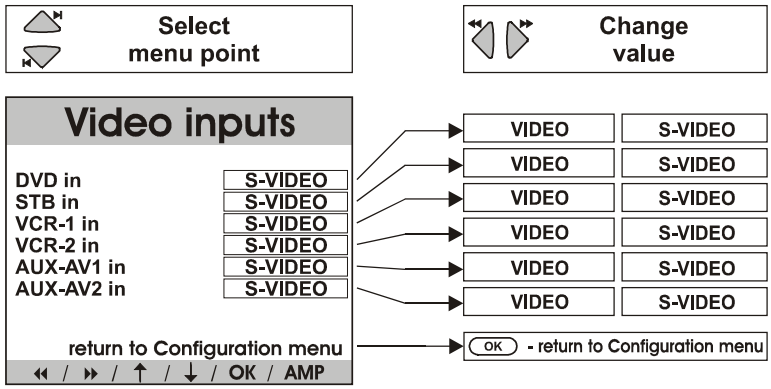
If this also fails to produce good results, the automatic calibration process is not suitable for your conditions. In this case you should set up the loudspeakers manually using the **'*Loudspeaker Menu*'**.

Video Inputs menu

Every AV source device is connected to one of the AV inputs of the **DD 1535 R** by means of a Video or S-Video cable, in order to supply picture data to the **DD 1535 R**. In the **'*Video Inputs menu*'** you determine for each AV input whether the source device connected to it is to operate in normal Video or S-Video mode.

Notes:

If your device features S-Video outputs, we recommend that you use S-Video mode, as this provides better picture quality.

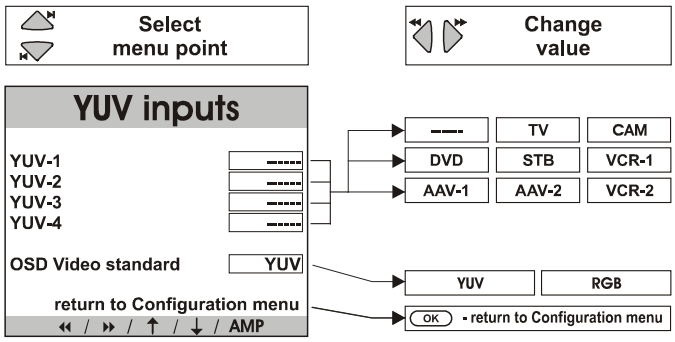


For more information on picture norms please refer to the chapter **'*Picture norms, connecting AV devices to the DD 1535 R*'**.

YUV Inputs menu

Some source devices provide picture signals using the high-quality Component Video norm (YUV, YPbPr or YCbCr).

If your video monitor features a corresponding Component input, we recommend that you connect all YUV-capable sources using YUV cables **in addition *)** to the standard Video or S-Video connections.



In the YUV Inputs menu you determine which source is connected to which YUV input.

For example, if the DVD player is connected to YUV input 1, as in '***Wiring Diagram 4***', you should enter **DVD** in the YUV-1 line of the menu. Repeat the procedure with all your YUV sources.

If you select a source configured in this way, the **DD 1535 R** switches the normal video signals (Video or S-Video) of this source through to the corresponding MONITOR output. At the same time the YUV signals of the source are passed to the YUV monitor output.

You can then switch between inputs on your video monitor, in order to decide whether you prefer to watch the film in normal video quality or in YUV quality.

*) You cannot simply decide not to connect the Video / S-Video signals, as YUV signals cannot be recorded by video recorders.

OSD Video standard

The **DD 1535 R** is capable of generating its user menus (OSD = On-Screen Display) and displaying them on the video monitor connected to it via the Component Video output using the YUV or RGB video norm. Here you should enter the picture norm used by your projector.

This setting only affects the Component Video output. It has no effect on the normal Video and S-Video outputs of the **DD 1535 R**.

Audio inputs Menu

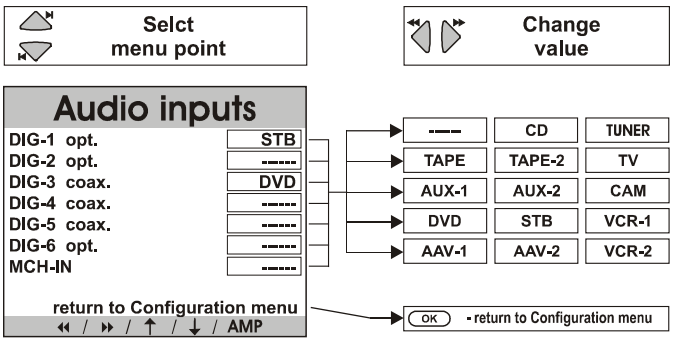
Up to eight **AV source devices** (with picture and sound signal) can be connected to your surround receiver.

The analogue stereo signals of the external source devices are passed to the **DD 1535 R** via the co-axial Cinch sockets.

Some source devices also generate a digital output signal, others an analogue multi-channel signal (**MCH**). Alternative input sockets of the **DD 1535 R** can be assigned to these source devices; these inputs are suitable for digital signals (co-axial or optical) and multi-channel signals.

In such cases the assigned digital or multi-channel signal from the decoder is accepted and processed instead of the analogue stereo input signal.

The alternative inputs are assigned within the ***'Inputs Menu'***.



The illustration of the menu on the left lists the available alternative inputs of the **DD 1535 R** - the co-axial and optical digital inputs (**DIG-1**, **DIG-2**, **DIG-3**, **DIG-4**, **DIG-5**, **DIG-6**) and the multi-channel input **MCH-IN**.

Each of these alternative inputs can be assigned to an audio or AV input.

CD **TUNER** **TAPE** **TAPE-2** **TV**

AUX-1 **AUX-2** **CAM** **DVD** **STB** [1)]

VCR-1 [2)] **VCR-2** [2)] **AAV-1** [3)] **AAV-2** [3)]

[1)] **STB** ➪ Settopbox (SAT-Receiver)

[2)] **VCR** ➪ Videorecorder

[3)] **AAV** ➪ AUX/AV

Examples:

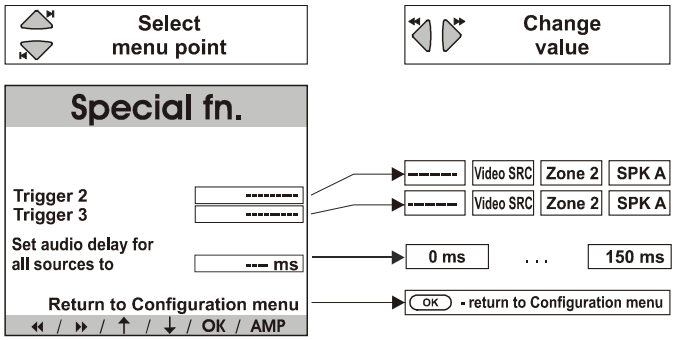
(see Wiring Diagram 3)
The digital sound signal of the **DVD** player is connected to the co-axial (Cinch) digital input **DIG-3** of the **DD 1535 R**; for this reason the name **DVD** must be added to **DIG-3** as a suffix - and that is the factory default setting.

(see Wiring Diagram 5)
The digital sound signal of the **SETTOPBOX** is connected to the optical digital input **DIG-1** of the **SR 1535 R**; in this case the name **STB** must be added as a suffix to **DIG-1.**

MCH-IN

Note:
The Multi-channel input is only active if the MCH-IN surround mode is selected. This mode can only be selected for the source to which MCH-IN is assigned.

Special Functions menu



In the Special Functions menu you can set the following points:

TRIGGER 2 / TRIGGER 3

The back panel of the **DD 1535 R** features control outputs for automation functions. For example, you can use them to control a motorised screen, so that it extends automatically when you select a video source; alter-natively the light could be dimmed automatically when you select video operations.

In this menu you can determine which conditions cause Trigger signals 2 and 3 to be generated.

Trigger signal 1 is switched automatically when the device is switched on, and cannot be configured.

If you have queries regarding the automation facilities and how they can be implemented, please ask your local **T+A** specialist dealer or an experienced electrician.

Audio delay for all sources:

The basic sound delay setting (LipSync) is crucially dependent upon the picture delay time of the display device - but it may also vary from one source device to the next. For this reason the **DD 1535 R** can be set to a different sound delay for each source.

To make it easier to set these values, this menu point can be used to set the delay time of the display device as the basic value for all sources. This value can then be altered individually in the Main Menu.

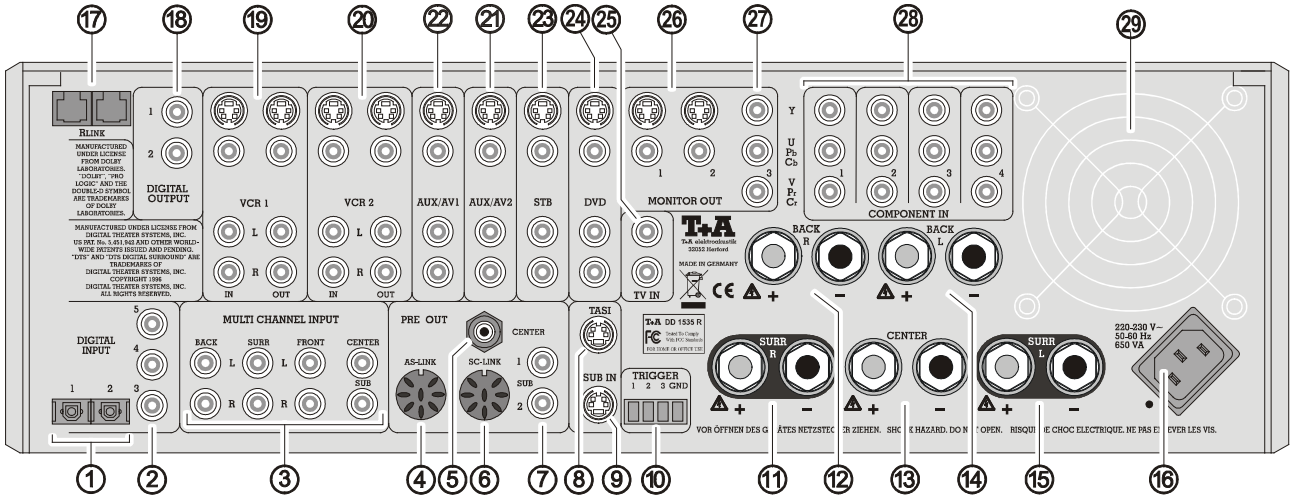
The operating instructions for your display device may state suitable values. If not, the following can be taken as a sensible starting point:

Display device	Sound delay
50 Hz television	0 ms
100 Hz television	xx ms
Progressive Scan Display	min. yy ms

Installation
Using the system for the first time
Safety notes

This section describes all those matters which are of fundamental importance when setting up and first using the equipment. This information is not relevant in daily use, but you should nevertheless read and note it before using the equipment for the first time.

Connections



① DIGITAL INPUT (OPTICAL)

Two inputs for digital source devices with optical digital outputs can be assigned to the AV inputs (VCR, SET-TOP BOX, DVD, TV AUX AV, CAM) or to the Audio inputs (CD, TAPE, AUX/P) (see '***Inputs Menu***').

② DIGITAL INPUT (CINCH)

The three inputs for digital source devices with co-axial digital outputs can be assigned to the AV inputs or to the Audio inputs (see '***Inputs Menu***').

③ Multichannel (MCH) INPUT

Input for a surround source with integral decoder. It can be assigned to any AV input or to the Audio inputs (see '***Inputs Menu***').

④ PRE OUT AS-LINK

Sockets for **T+A** active loudspeakers with **AS-LINK** input. The signal for the rear channels is present at this output.

⑤ PRE OUT CENTER

Output for connecting a active center loudspeaker or an external power amplifier for the center channel.

⑥ PRE OUT SC-LINK

Output for connecting a **T+A** active sub-woofer with SC-LINK input.

⑦ PRE OUT SUBWOOFER

2 sockets for active sub-woofers (CINCH)

⑧ TASI

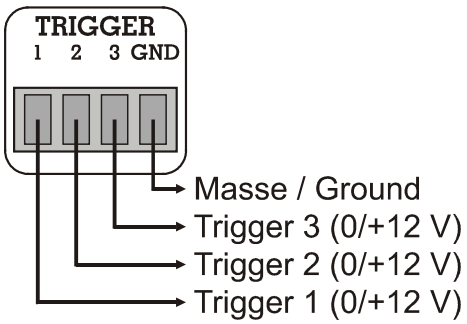
Interface for connecting the decoder to a **T+A 'R'**-series pre-amplifier, integrated amplifier or receiver. The interface automatically switches to surround mode. In this mode the volume and tone controls of the stereo pre-amplifier are disabled, as these functions are now assumed by the decoder.

⑨ SUBWOOFER INPUT (CINCH)

The stereo pre-amplifier output can be connected to this socket in order to pass its output signal through to the subwoofer in stereo mode.

⑩ TRIGGER output

Control signals are present at these sockets for automation functions (remote switching of projector, light control, motorised screen etc.) (see '***Special Functions menu***').



The output level of the Trigger signals is 12 V. Each output can handle a maximum load of 5 mA.

⑪ SURR (R) and ⑮ SURR (L)

Terminals for surround loudspeakers [1)]

In a 5.1 system the right and left rear surround loudspeakers are connected here; in a 7.1 system, the side speakers.

⑫ / ⑭ Back

Rear loudspeaker terminals for 7.1 mode.

Note:

See **'*Wiring Diagrams 1*'**

⑬ CENTER

Terminals for Centre loudspeaker [1)]

The centre loudspeaker (if present) is connected to these terminals. The speaker is located adjacent to the TV set or screen.

[1)] Notes:

The impedance of the loudspeakers connected to the surround receiver should not be less than 4 Ω (DIN rating). The output stages are designed to cope with a minimum load of 2 Ω, but if run for an extended period at very high volume the high currents may cause the output stages to overheat, which would cause the protective circuit to switch them off automatically to prevent damage.

It is important to ensure that the screw terminals are firmly tightened, and that there are no stray strands of wire which could cause short-circuits.

The **T+A** accessory range includes a selection of high-quality cables which are designed to match **T+A** equipment exactly.

Note:

Only for countries where banana plugs are approved for use as loudspeaker connections!

The red / black stoppers can be removed from the loudspeaker terminals. The speakers can then be connected using banana plugs.

The stoppers are simply a push-fit in the terminals, and can be prised out from the rear using a suitable tool such as a knife blade.

⑯ Mains input

The mains lead is connected to this socket. Be sure to read the notes in the sections **'*Connecting the equipment, using it for the first time*'** and **'*Safety Notes*'** before you connect the equipment to the mains supply.

⑰ R LINK

Control outputs for connecting **T+A** devices using the **R LINK** control system. Both sockets are of equal status.

⑱ Digital OUTPUT

Digital audio signals are present at these sockets for digital recorders or external processors.

Note:

Signals are only present here if a digital source device is in use. The outputs are switched off when an analogue source is in use.

⑲ VCR 1
⑳ VCR 2

Socket area containing video recorder inputs and outputs.

㉑ AUX AV 1 **(STEREO CINCH and VIDEO)**
㉒ AUX AV 2 **(STEREO CINCH and VIDEO)**

Inputs for connecting additional AV devices
(for YUV connections see *** Note**)

㉓ SET-TOP BOX

Sockets for a set-top box / sat. receiver
(see **'*Wiring Diagram 4*'**)
(for YUV connections see *** Note**)

㉔ DVD

Sockets for a DVD player
(see **'*Wiring Diagrams 2*** and **3'**)
(for YUV connections see *** Note**)

*** Note:**

A YUV Component Video input can also be assigned to any A/V source device (see section **'Configuration / YUV inputs'** and **'Wiring Diagram 4').**

㉕ TV IN

Sound input for TV set

㉖ Monitor OUT

Picture outputs for video monitor (TV set, projector etc.) with Video or S-Video input.

㉗ Picture output **(Component Video)**

Additional picture output for video monitor with YUV input.

Note:

Here only YUV signals are present which are received via one of the YUV inputs (㉗) . Video signals or S-Video signals from other AV inputs are not present. For Video / S-Video sources the monitor outputs (㉕) must always be connected to the projector in addition, in order to provide a video connection.

Available as an option: YUV converter module

The YUV converter module converts all Video and S-Video input signals to YUV output signals. If this module is present, all video signals are sent as YUV signals to the monitor and the additonal Video / S-Video cables to the monitor can be omitted. For details about the YUV converter module ask your **T+A** dealer or distributor.

㉘ YUV Component Video inputs

Each of these inputs can be assigned to one of the source devices (see **'*YUV Inputs*'** menu).

㉙ fan **(for heat dispersion)**

The fan must never be covered or obstructed by cables.

SAFETY NOTES

All the components we use meet the currently valid German and European safety norms and standards.

Our production areas are supervised by highly qualified expert staff, and all final production units are checked comprehensively by a fully automated, computer-controlled system to ensure uniformly high quality. We guarantee that our products meet our own specifications to the full.

Please read right through these operating instructions carefully before you attempt to use your new surround receiver. Note in particular the information regarding setting up and operating the equipment, and the safety notes.

The unit must be set up in such a way that none of the connections can be touched directly (especially by children). Be sure to read the information in the section entitled '***Installation***'.

The power supply required for this decoder is printed on the mains supply socket. The unit must never be connected to a power supply which does not meet this specification. If the unit is not to be used for a long period, disconnect it from the mains supply at the wall socket.

Mains leads must be deployed in such a way that there is no danger of damage to them (e. g. through persons treading on them or from furniture). Take particular care with plugs, distribution panels and connections at the surround receiver.

Liquid or foreign bodies must never be allowed inside the case. Protect the unit from drips and splashes of water; never place flower vases or fluid containers on the unit. Mains voltage is present inside the unit, and there is a risk of lethal electric shock. Do not exert undue force on the mains connectors.

Caution!

The mains button is not a mains isolation switch. Even when the green LED is not glowing, parts of the machine remain connected to the mains power supply. If the decoder is not to be used for a long period, we recommend that you isolate it from the mains by pulling out the mains plug at the wall socket.

This device should never be used without proper supervision. The surround receiver should be set up well out of the reach of small children. This applies to all electrical equipment.

The unit should only ever be opened by a qualified specialist technician. Repairs and fuse replacements should be entrusted to an authorised T+A specialist workshop.

With the exception of the connections and procedures described in these instructions, no work of any kind may be carried out on the surround receiver by unqualified persons.

If the unit is damaged, or if you suspect that it is not functioning correctly, immediately disconnect the mains plug at the wall socket, and ask an authorised T+A specialist workshop to check it.

The unit may be damaged by excess voltage in the power supply, the cable network or in aerial systems, as may occur during thunderstorms (lightning strikes) or due to static discharges.

Special power supply units and excess voltage protectors such as the T+A **'Power Bar'** mains distribution panel offer some degree of protection from damage to equipment due to the hazards described above.

However, if you require absolute security from damage due to excess voltage, the only solution is to disconnect the unit from the mains power supply and any aerial systems.

If you believe there is a danger of excess voltage (e. g. when an electrical storm is building up) disconnect the surround receiver from the mains and the aerial socket.

All mains power supply and aerial systems to which the unit is connected must meet the currently valid regulations, and must be installed by an approved electrical installer.

Note:

Many insurance companies offer lightning damage insurance for electrical equipment as part of their household insurance service.

Approved usage

This device is designed exclusively for reproducing sound and/or pictures in the domestic environment. It is to be used in a dry indoor room which meets all the recommendations stated in these instructions.

Where the equipment is to be used for other purposes, especially in the medical field or any field in which safety is an issue, it is essential to establish the unit's suitability for this purpose with the manufacturer, and to obtain prior written approval for this usage.

T+A equipment which includes a radio or television receiving section must be operated within the stipulations laid down by the Post Office and the Telecommunications authorities in the country in which it is used. This unit may only be used to receive or reproduce those transmissions which are intended for public consumption. The reception or reproduction of other transmissions (e. g. police radio or mobile radio broadcasts) is prohibited.

The only permissible method of disposing of this product is to take it to your local collection centre for electrical waste.

Care of the surround receiver

Always disconnect the unit from the mains supply before cleaning it.

The surfaces of the case should be wiped clean with a soft, dry cloth only.

Never use abrasive or solvent-based cleaners!

Before switching the unit on again check carefully that no short-circuits exist at the terminals, and that you have not disturbed any connections.

Device approval and conformity with EC directives

In its original condition the unit meets all currently valid German and European regulations. It is approved for use as stipulated within the EC.

By attaching the CE symbol to the surround receiver, **T+A** declares its conformity with the EC directives **89/336/EEC**, amended by **91/263/EEC** and **93/68/EEC**, and **73/23/EEC**, amended by **93/68/EEC** and the national laws based on those directives.

The original, unaltered factory serial number must be present on the outside of the unit, and must be clearly legible. The serial number is a constituent part of our conformity declaration and therefore of the approval for operation of the device.

The serial numbers on the decoder and in the original **T+A** documentation supplied with it (in particular the inspection and guarantee certificates), must not be removed or modified, and must match exactly.

Infringing any of these conditions invalidates **T+A** conformity and approval, and the unit may not then be operated within the EC. Improper use of the equipment makes the user liable to penalty under current EC and national laws.

Any modifications or repairs to the unit, or any other intervention by a workshop or other third party not authorised by **T+A**, invalidates the approval and operational permit for the equipment.

Only genuine **T+A** accessories may be connected to the decoder, or such auxiliary equipment which is itself approved, and fulfils all currently valid legal requirements.

When used in conjunction with auxiliary devices or as part of a system, this unit may only be used for the purposes stated in the section entitled '***Approved usage'***.

Tested To Comply With FCC Standards
FOR HOME OR OFFICE USE

FCC Information to the user

(for use in the United States of America only)

Class B digital device – instructions:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different form that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Installation, using the unit for the first time

General notes on setting up the unit:

Carefully unpack the digital surround decoder and store the original packing materials carefully. The carton and packing are specially designed for this unit and will be needed again if you wish to move the equipment at any time. Please be sure to read the safety notes in these instructions.

If the unit gets very cold (e. g. when being transported), condensation may form inside it. Please do not switch it on until it has had plenty of time to warm up to room temperature, so that any condensation evaporates completely.

Before placing the unit on a sensitive surface, please check the compatibility of the lacquer and the unit's feet at a non-visible point.

The decoder should be placed on a rigid, level base. When placing the unit on resonance absorbers or de-coupling components make sure that they do not compromise the stability of the unit.

The unit should be set up in a dry, well-ventilated site, out of direct sunlight and away from radiators.

The unit must not be located close to heat-producing objects or devices, or anything which is heat-sensitive or highly inflammable.

When installing the unit on a shelf or in a cupboard it is essential to provide an adequate flow of cooling air, to ensure that the heat produced by the unit is dissipated effectively.

Any heat build-up will shorten the life of the unit and could be a source of danger!

Note:

- The **DD 1535 R** is designed exclusively for use in conjunction with a **T+A R**-series stereo pre-amplifier, integrated amplifier or receiver.
- The **DD 1535 R** features five integral output stages for the Centre, Surround and Rear loudspeakers. The signals for the front speakers are reproduced by the output stages of the stereo amplifier.
- The **DD 1535 R** is remotely controlled via the **R LINK** system and the stereo unit.
- For possible combinations with external devices or **T+A** amplifiers without **RLINK**, please contact your **T+A** dealer.

Notes on connections:

- Be sure to push all plugs firmly into their sockets. Loose connections can cause hum and other unwanted noises.
- Deploy all mains leads, loudspeaker cables and remote control leads as far as possible from low-level leads (inter-connects) and aerial cables. Never route them over or under the decoder.
- Connect the unit to a correctly earthed mains socket using the mains lead supplied.
- To achieve maximum possible interference rejection the mains plug should be connected to the mains socket in such a way that phase is connected to the mains socket contact marked with a dot (●). The phase of the mains socket can be determined using a special meter. If you are not sure about this, please ask your specialist dealer.
- We recommend the use of the **T+A 'POWER LINE'** ready-to-use mains lead in conjunction with the **'POWER BAR'** mains distribution panel, which is fitted with a phase indicator as standard.

As the decoder can be combined with a very wide range of different AV components, it must be configured carefully for each audio / video device in order to achieve optimum sound and picture quality.

We recommend that you adopt the following procedure when using the decoder for the first time:

a. Connect the TV set and the surround speakers to the decoder (wiring diagram **1**).

b. Integrate the digital surround decoder including speakers and TV set into your existing Hi-Fi system.

c. The remaining wiring examples show how the various analogue and digital picture and sound sources can be connected to the digital surround decoder.

If you encounter problems when setting up and using the decoder for the first time, please remember that the cause is often simple, and equally simple to eliminate. Please refer to the section of these instructions entitled **'*Trouble-shooting*'**.

Connecting the TV set and surround speakers to the decoder:

For important information regarding loudspeaker configurations and modes of operation please refer to the chapter **'*Loudspeaker configurations for the DD 1535 R*'**.

The components of your system should be connected as shown in Wiring Diagram **1**. This is the procedure:

- Connect the surround loudspeakers to the appropriate output terminals on the decoder.
- If present, connect the input of the active sub-woofer to **SUB OUT**.
- Connect the monitor socket on the decoder to your TV set using a video cable.

  Note:

  If your TV set has a SCART input socket, please use the S-Video / SCART adaptor lead supplied.

- Connect the aerial input **FM ANT** to a FM aerial socket.

To check the connection between your TV set and the **DD 1535 R** switch your television to the external AV input and temporarily call up the **'*Configuration menu*'**.

This is done by holding the AMP MENU button on the front panel of the **DD 1535 R** or the **F6** pressed in.

- This is done by holding the AMP MENU button on the front panel of the **DD 1535 R** pressed in.

If this menu does not appear, the screen shows monochrome picture or the picture is unstable, please read the section **'Trouble-shooting'**.

Connecting the decoder to a T+A integrated amplifier

with TASI and RLINK socket:

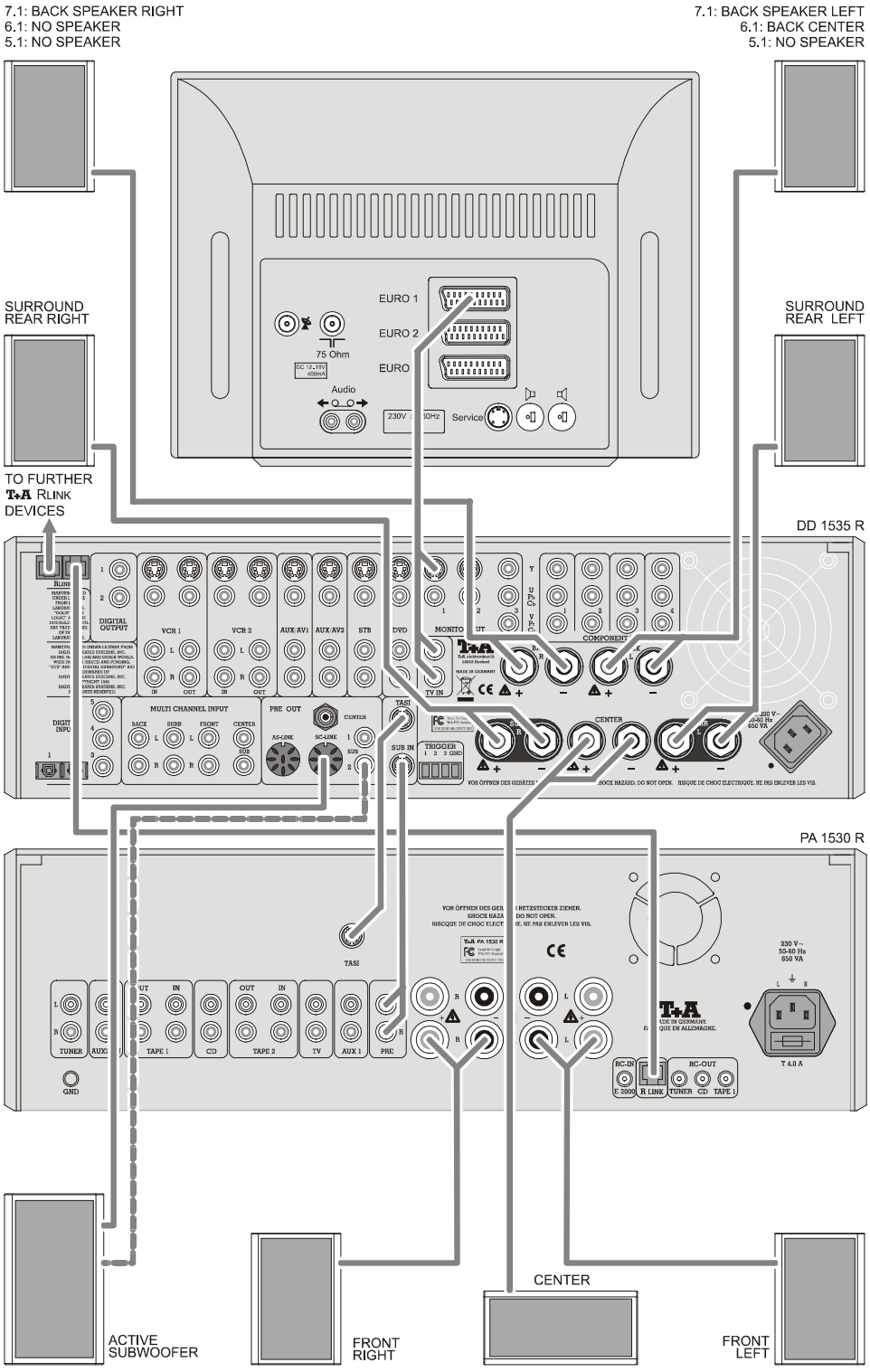
To keep the wiring diagram as clear as possible, only the integrated amplifier is shown, i. e. not the analogue source devices. The source devices should be connected as shown in following wiring diagrams. Complete the wiring of the components as shown in wiring diagram as follows:

- Connect the **TASI** interface on the decoder to the **TASI** socket on the T+A pre-amplifier or integrated amplifier using the **TASI** lead.
- Connect the **R**LINK socket on the decoder to the **R**LINK socket on the integrated amplifier.
- Please be sure to connect the pre-amplifier output **PRE** on the pre-amplifier to the sub-woofer input **SUB IN** on the decoder. This improves the signal : noise ratio of the system, even if the sub-woofer is not used in standard stereo mode.

> **Note:**
>
> If you are using a pre-amplifier with only one **PRE** output, and you have already connected the power amplifier to this, you can use a **Cinch Y-lead** adaptor to gain access to the pre-amplifier signal. Please ask your specialist T+A dealer for advice.

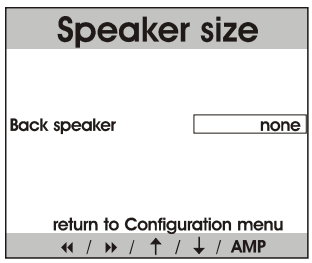
- Finally connect the mains power supply and switch the system on.

Wiring diagram 1: Connecting the loudspeakers and the TV set to the DD 1535 R

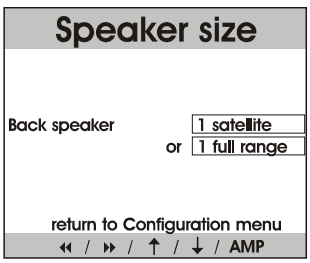


Use of banana plugs: see the section entitled '***Back panel connections***'.

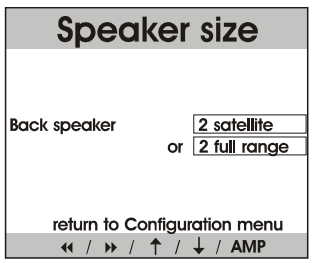
5.1 Loudspeakerset



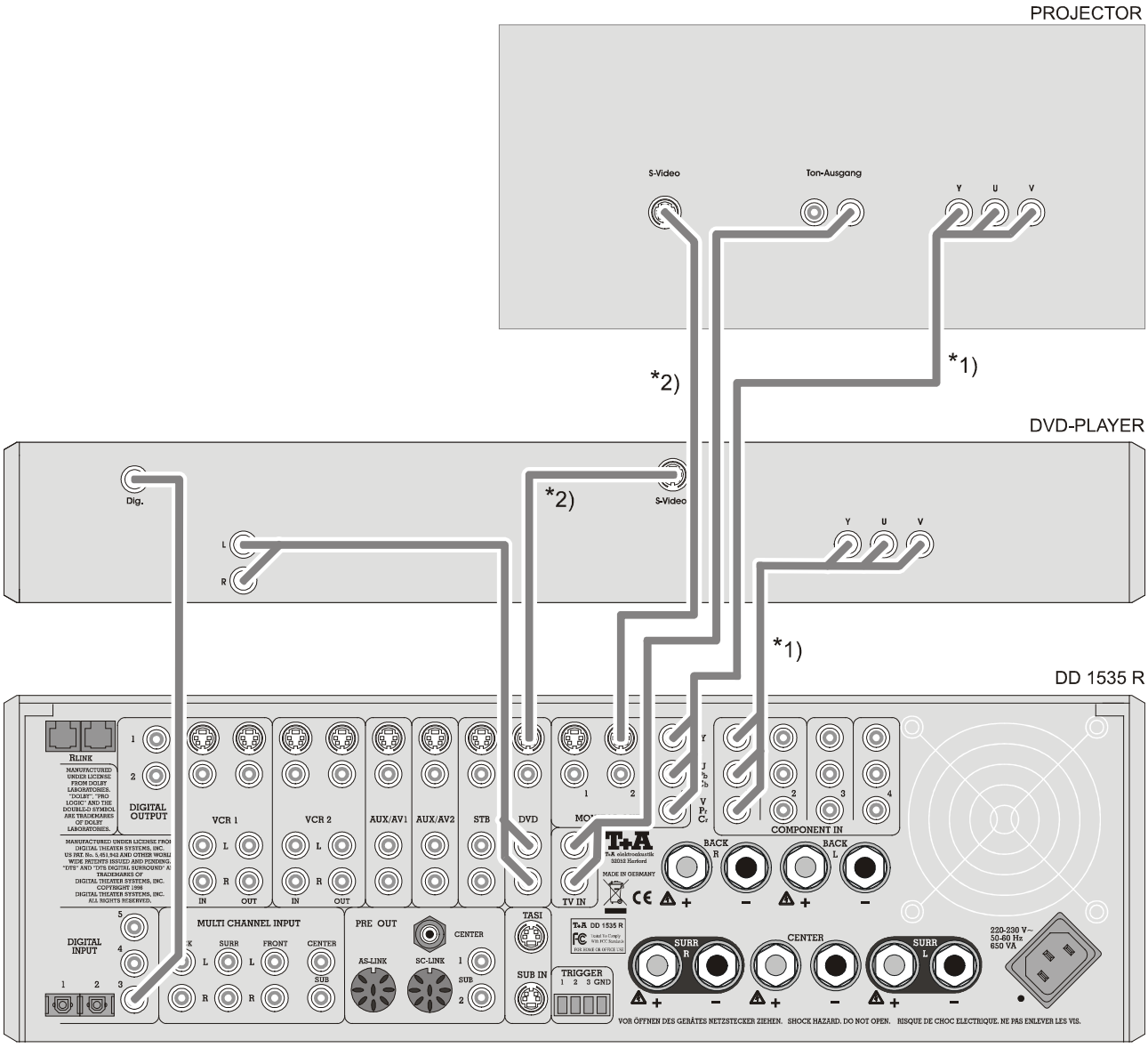
6.1 Loudspeakerset



7.1 Loudspeakerset

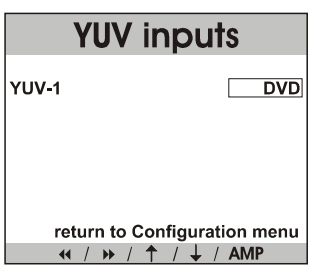


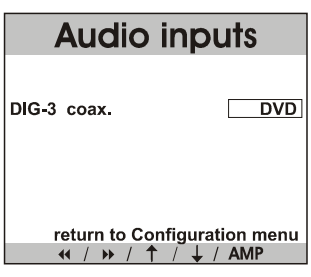
Wiring Diagram 2: video monitor with additional Component input



*1) additional Component cable for high-quality picture reproduction - select the YUV input on your projector when using DVD (this may have to be done manually if your projector does not feature automatic input signal detection).

*2) S-Video connection necessary for playing normal Video and S-Video sources, and video recorder recordings.





DVD player as digital sound and picture source

The components of your system should be connected as shown in wiring diagram **3**. This is the procedure:

- Connect the digital **SURROUND** sound output of the DVD player to the digital input (**DIGITAL INPUT 3**) of the **DD 1535 R** using a co-axial digital lead.

  Notes:
  - Be sure to set the digital output of your DVD player to surround mode.
  - If the digital output of your DVD player is set to "**PCM**", the DVD player will only generate a digital stereo signal. In this mode the **DD 1535 R** cannot carry out any surround decoding!

- Use an audio cable to connect the Analogue OUT sockets on the DVD player to the DVD sound inputs of the **DD 1535 R**.
- If you also wish to use the DVD player as a high-quality CD player, connect its analogue output to the pre-amplifier input **CD**.
- Connect the die **S-Video OUT** socket of your DVD player to the **S-Video IN** socket on the decoder using a S-Video lead.

  Note:

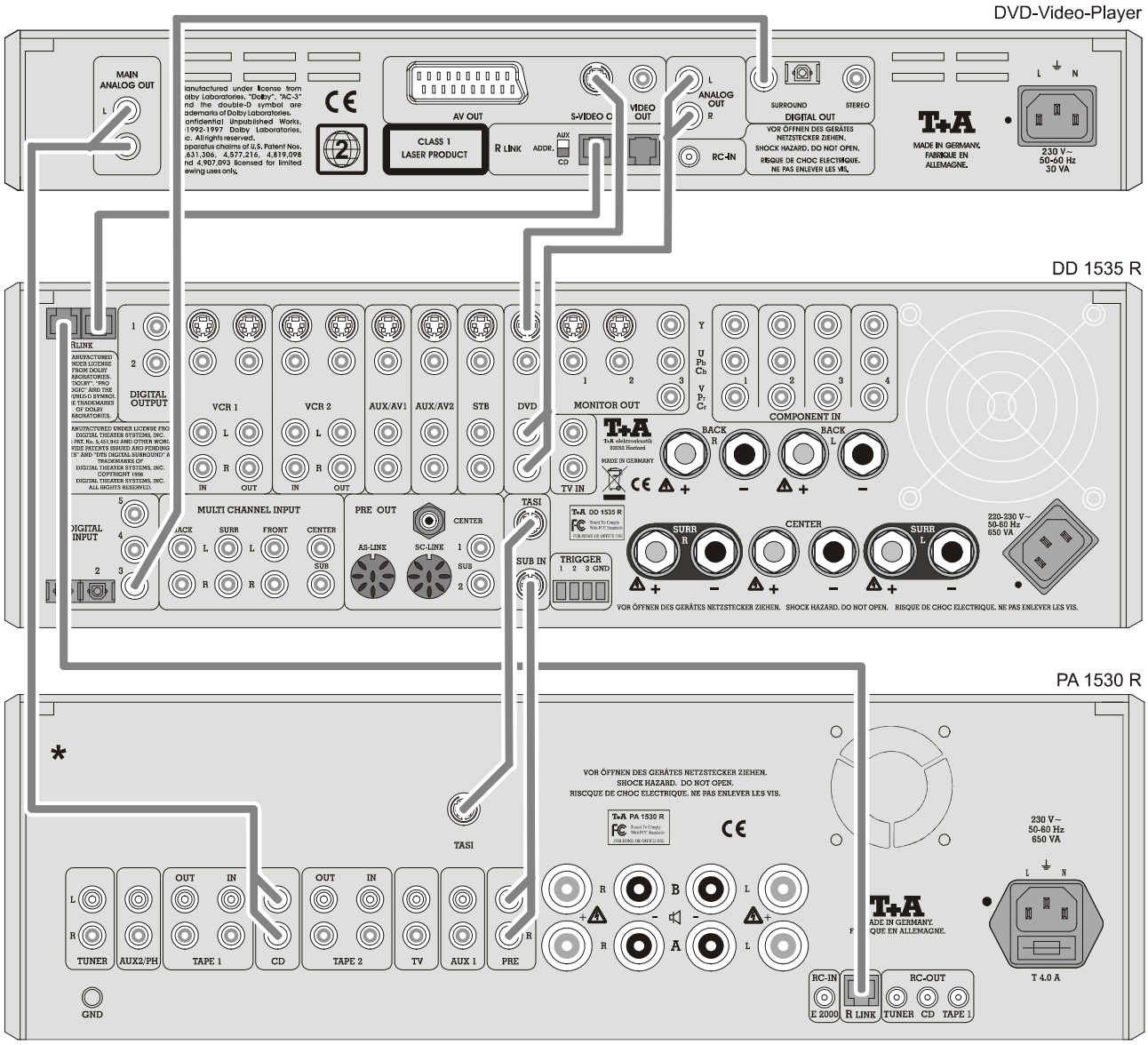
  If your DVD player only features a SCART socket, connect it using a SCART / S-Video adaptor.

- Connect the **R**LINK socket on the DVD player to the **R**LINK socket on the decoder; if this is already in use by another source device, connect the lead to the vacant **R**LINK socket on the second source device.
- Finally connect the mains power supply and switch the system on.

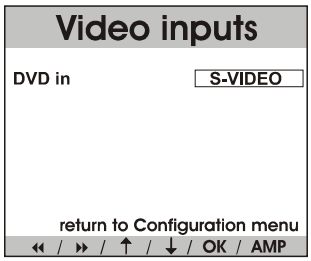
Note:

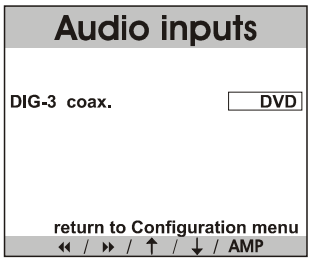
If your DVD player features a Component Video (YUV) output, you can also use this to connect to one of the YUV inputs of the **DD 1535 R** in addition to the S-Video connection (see Wiring Diagram 4).

Wiring diagram 3

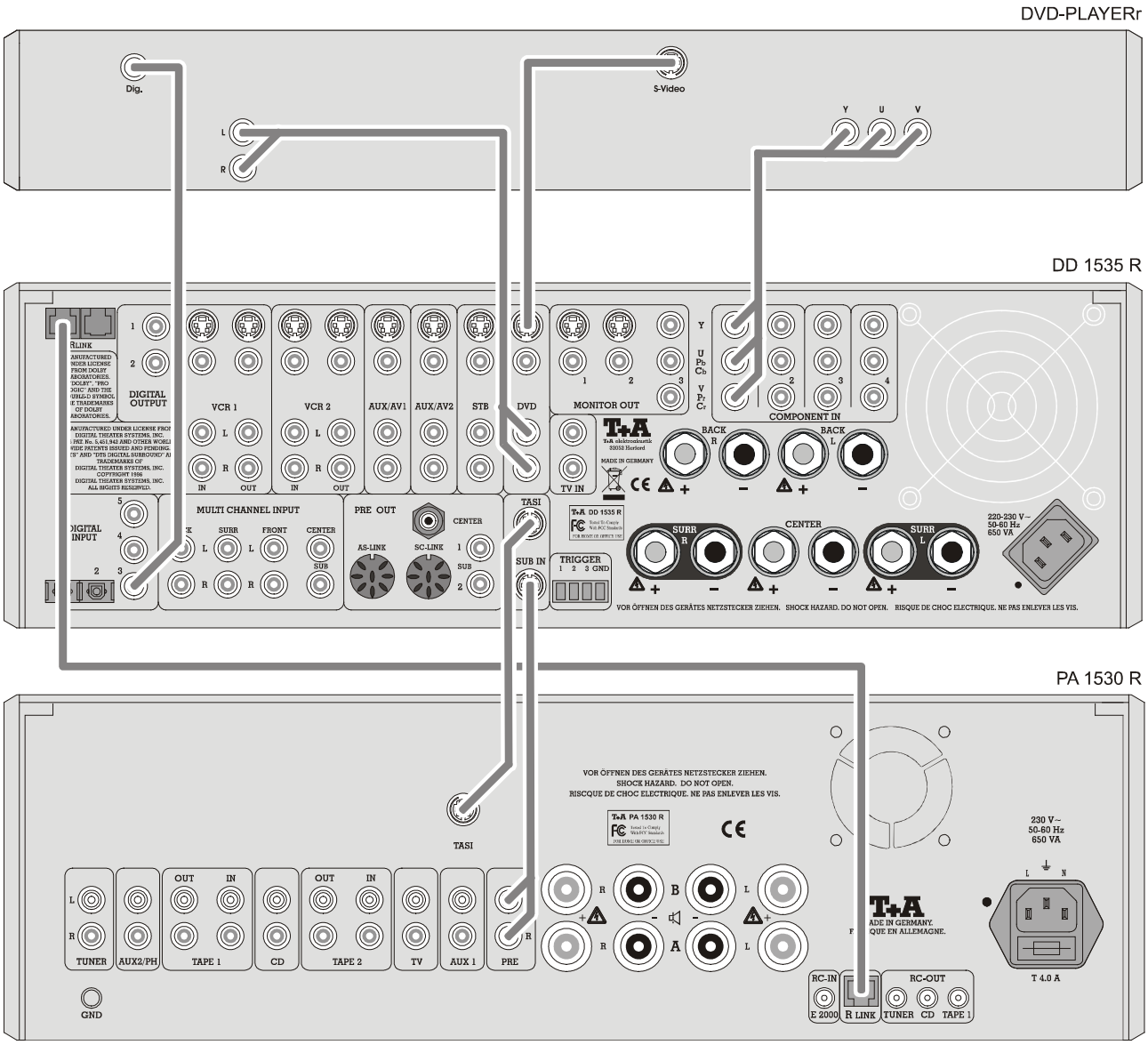


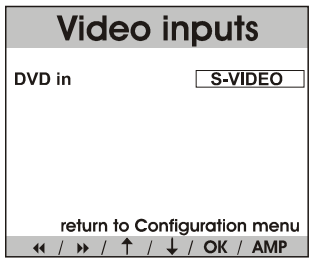
* Sound cable between DVD player and stereo amplifier only necessary if the DVD is also to be used for pure two-channel stereo reproduction via the stereo amplifier, or if you wish to use an audio recorder (TAPE) to make sound recordings from the DVD player.

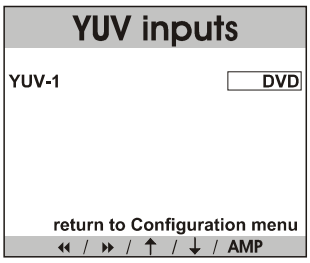


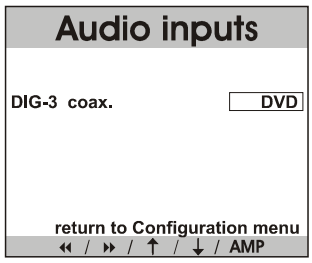


Wiring Diagram 4: a DVD player with YUV Component Video output connected to the DD 1535 R









Digital SAT receiver (set-top box)

The components of your system should be connected as shown in Wiring Diagram 5. This is the procedure:

- If the set-top box features an optical digital sound output, connect it to the digital input (**DIGITAL INPUT 1** or **2**) of the **DD 1535 R** using an optical cable.

> **Note:**
>
> **Set-top boxes with a co-axial digital output can be connected to one of the (Cinch) digital inputs 3 . . . 5.**

- Use an **S-Video** cable to connect the **S-Video** sockets on the set-top box to the **S-Video** input sockets of the **DD 1535 R**.

> **Note:**
>
> Instead of a set-top box, any other AV source device can also be connected to the **SETTOPBOX** input in the same manner.
>
> If the set-top box only features SCART connections, please use a SCART / S-Video adaptor cable to connect the system components.

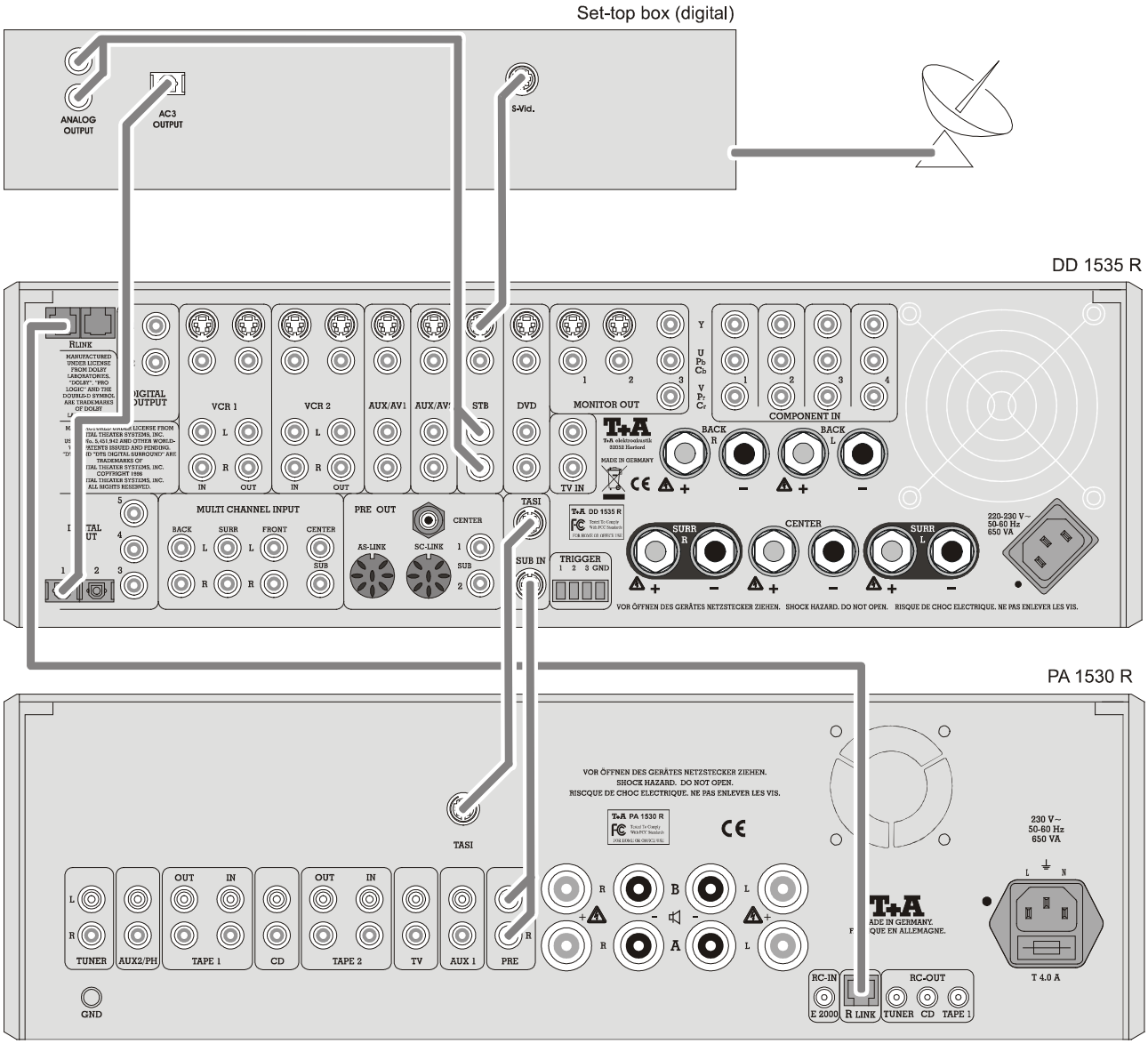
- Finally connect the equipment to the mains supply and switch the system on.

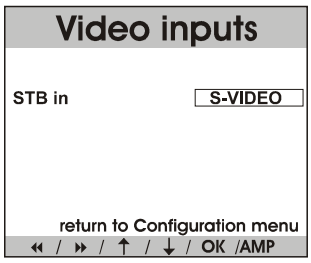
- Settings in the '***Inputs Menu***':
  The digital sound signal of the **set-topbox** is connected to the optical digital input **DIG-1** on the **SR 1535 R**; to cater for this you should add the name **STB** as a suffix to **DIG-1.**
- In the '***Video Input menu***' select the type of video signal (in this case S-Video) for the appropriate input.

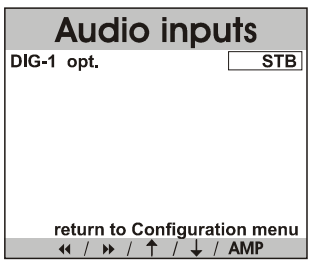
Selecting the source device settopbox in normal use:

- The source button (STB) on the front panel or the remote control button of the same name selects the **settopbox** as current **surround viewing and listening source**.

Wiring Diagram 5







Recorders (audio devices with record and playback facilities)

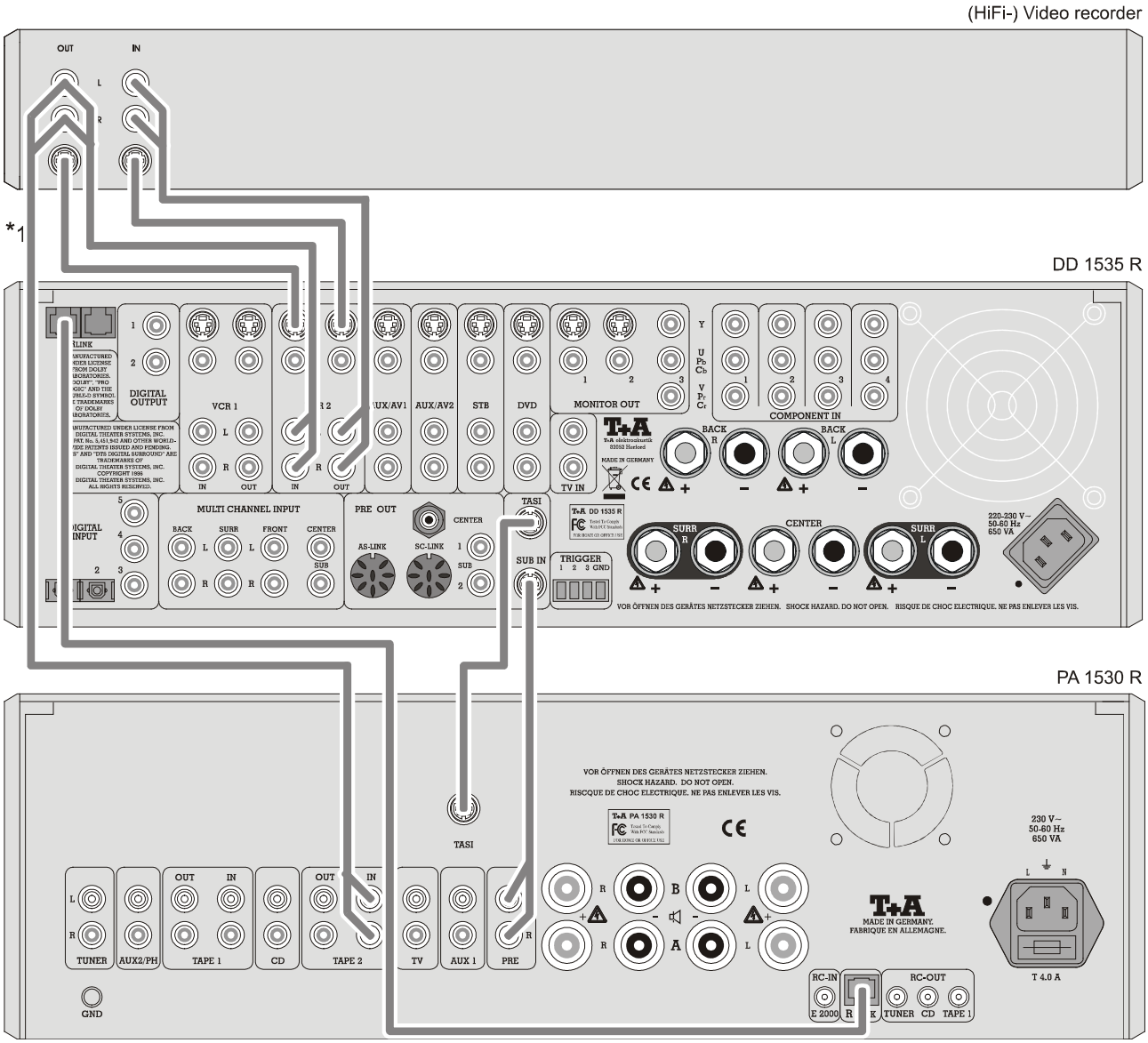
Analogue recorders

The components of your system should be connected as shown in Wiring Diagram 6. This is the procedure:

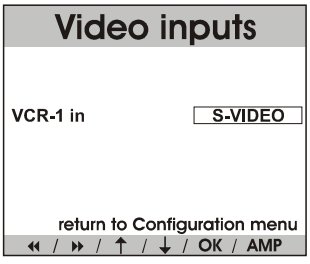
- Connect the **INPUT** sockets of the recorder to the **OUT** sockets (e. g. **VCR 1**) of the **DD 1535 R**, and the **OUTPUT** sockets of the recorder to the **IN** sockets (e. g. **VCR 1**) of the **DD 1535 R**. Take care to maintain the correct channel assignment (**L** to **L, R** to **R**).

Note:
It is only possible to record from sources whose analogue sound outputs are connected to the **DD 1535 R**. If you are using a device with a digital sound output, please be sure to connect the analogue sound output to the input sockets of the **DD 1535 R** at the same time.

*1 If you also wish to use VCR 2 as a Hi-Fi audio recorder, please connect its sound outputs to the TAPE 2 outputs of the stereo amplifier, using a Y-lead if necessary.



***** Sound cable between DVD player and stereo amplifier only necessary if the DVD is also to be used for pure two-channel stereo reproduction via the stereo amplifier, or if you wish to use an audio recorder (TAPE) to make sound recordings from the DVD player.



Optimising the system

Loudspeaker and signal leads

The loudspeaker and signal leads used affect the playback quality of the entire system to an extent which should not be underestimated. **T+A** therefore recommends the use of high- quality leads and connecting plugs.

Our range of accessories includes a series of excellent leads and plugs possessing characteristics which have been matched to our loudspeakers and electronic components and which combine with them to give outstanding results.

If the space for the player is inconvenient or restricted, you will also find leads of non-standard lengths and special plugs (e. g. angled) among the **T+A** accessories with which almost any connection or setting-up problem can be satisfactorily resolved.

Mains leads and filters

Apart from supplying the necessary power for your video/audio equipment, the mains electricity system can also cause interference from domestic appliances, radios and computers situated elsewhere in the home.

To prevent electromagnetic interference, our range of accessories includes the specially shielded **POWER FOUR** mains lead, the **POWER LINE** mains lead with sleeve core filters and the **POWER BAR** multiple socket outlet with mains filters.

In many instances, the playback quality of our equipment can be further enhanced with these accessories.

Your **T+A** dealer can provide you with comprehensive, expert, non-obligatory advice on all matters associated with leads and connections. We can also supply comprehensive informative material on this subject on request.

Physical insulation

Tone quality is influenced to a considerable extent by the type of surface and underlying support on which sophisticated HiFi instruments are placed.

As far as possible, the surface should be strong, stable, rigid and level. The player is fitted with the newly developed **T+A** insulating feet which possess internal cushioning and thus effectively insulate the player from the surface on which it stands.

Note:

The screw-type feet can be tightened or eased off if it is necessary to compensate for irregularities in the surface when levelling the player.

The player must be adjusted in such a way that it is level in all directions. All the feet must rest securely on the surface, i. e. the player must not rock.

Surround sound - explanatory notes

General information:

The following section is not concerned directly with the operation of your **DD 1535 R** decoder, but is rather intended to explain some of the terms which arise in connection with surround systems. It is intended to help you understand and exploit the facilities and capabilities of your **DD 1535 R** to the full.

As we all know, a normal stereo recording has two channels - left and right. When stereo material is reproduced in your listening room, the entire sound event takes place on an imaginary stage which covers the space between the two loudspeakers.

The listener is able to locate specific sound events over the width of the stage; with good recordings there is also a slight impression of depth, i. e. behind the speakers. Nevertheless, normal stereophonic reproduction always leaves the listener isolated from the event.

As a result it is impossible to recreate the excitement of a live atmosphere, as in a real concert hall, since the acoustics of the concert hall are crucially influenced by sound reflections from the side and back walls, the floor, the ceiling, and from objects inside the hall.

The reflected sound comes from any number of directions - not just from the front. If a sound event is to be reproduced with real fidelity, it therefore follows that a proportion of the sound must emanate from all directions in the room, that the “reflections” must be timed accurately, and that they must be generated at a realistic level.

Reproducing television sound via a conventional stereo system is problematic, because it is often impossible to locate dialogue on the screen itself.

A further point is that exotic sound effects have been in use in the cinema since the 1950’s, using proper multi-channel sound systems. These effects are often crucial to the overall impact of a film, but they cannot be reproduced at home with a conventional stereo sound system.

Over the last few years surround technologies have been developed which make it possible to experience all these effects within the listener’s own four walls, with the result that a far greater simulation of reality is possible than with conventional stereo.

For an effective surround system we always recommend the installation of a centre loudspeaker, which is installed below or directly above the TV set. This loudspeaker helps greatly in locating particular sound events (especially dialogue) on the TV screen itself.

Types of reproduction

The **DD 1535 R** makes available a range of different types of reproduction: **multi-channel mode, mono/stereo mode** and **sound fields.**

The surround receiver ‘remembers’ the setting for each input, and reverts to the mode of operation which was last used for that input when you switch to it from another input.

Multi-channel mode (surround):

Mode of operation for the reproduction of multi-channel programmes (e. g. DOLBY Pro Logic II, DOLBY DIGITAL, dts, etc.)

Digital multi-channel signals are detected by the encoding methods employed, and the surround receiver automatically sets the correct loudspeaker assignment. The current reproduction mode is displayed on the front panel screen.

For **analogue** input signals the correct mode of operation cannot be detected automatically by the decoder. In this case the surround receiver always reverts to Dolby Pro Logic II decoding. If the signal is actually in a different form (stereo, mono - see below), then the mode must be set manually instead of surround mode.

The T+A surround system

Multi-channel reproduction based on surround technology does indeed open up new worlds of experience, but the technical implementation of a multi-channel surround system does involve a number of potential pitfalls. Many existing surround systems have gained a reputation for no more than moderate sound quality, especially when used in normal stereo mode.

The reason for this lies in the tiny magnitude of the sensitive analogue stereo signals. These signals are measured in the range of just a few Millivolts (thousandths of a Volt), and unwanted interference to these signals can be perceived by the human ear even when a thousand times smaller than that. Conventional surround amplifiers feature a single case in which digital signals and high-frequency video signals live in the same space as the sensitive analogue signals, and this represents an open invitation for interference between the various signals.

This compromise solution is entirely unacceptable to us at **T+A**, so for our surround system we developed an arrangement in which the various signal processing sections were kept entirely apart. The system therefore comprises two specialised devices: an analogue two-channel stereo amplifier is used to process high-quality stereo signals, while the digital surround signals are processed in the surround decoder which is an independent machine.

In the **T+A** system the analogue and digital sub-assemblies are separated from each other completely, and this eliminates the danger of interference to the delicate analogue signals. The net result is that there is absolutely no danger of a loss in quality in analogue stereo reproduction.

To make it possible to integrate the surround decoder easily into an existing **T+A** system, we developed the **T+A** surround interface (TASI), which also provides the means to process and reproduce analogue signals, e. g. Dolby Surround encoded source material.

This interface is the key to integrating the decoder elegantly into the overall system. At the same time the decoder has absolutely no effect on normal stereo signals, since it is completely removed from the signal path during normal stereo operations.

Not even the length of the signal paths is changed; in stereo mode all signals remain in the pre-amplifier section of the amplifier, i. e. they are not forced to make a detour through the surround decoder.

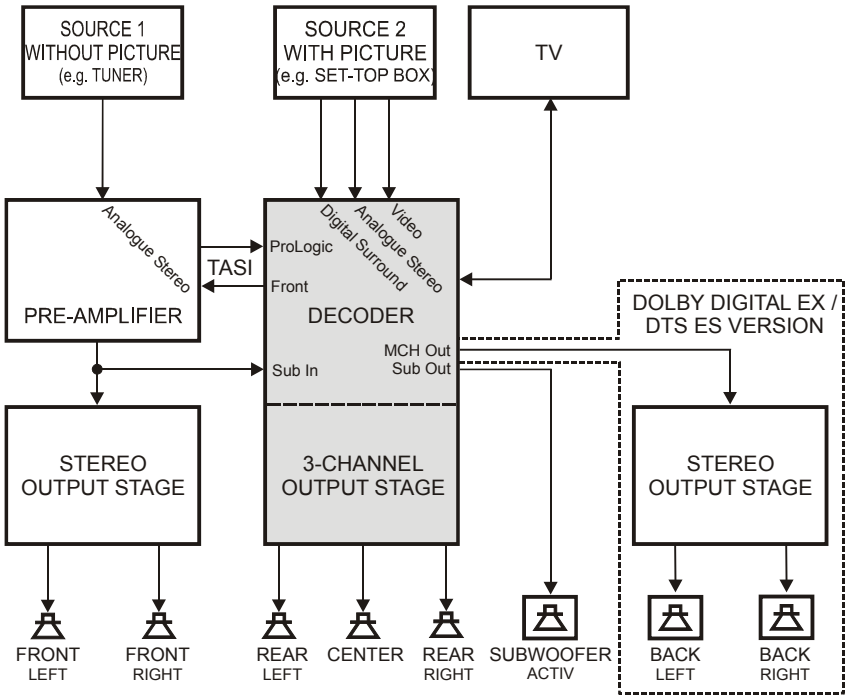
When the system is used in Pro Logic II mode, the TASI interface also ensures that the decoder is looped in at the ideal point and at the optimum level in terms of signal processing, i. e. directly after the source selector switch.

An additional advantage of the TASI interface is that it makes it possible to exploit the superb output stages of a typical **T+A** stereo system for the front channels when in surround mode.

To ensure that the sound from the whole system is as balanced and harmonious as possible, the output stages built into the decoder are identical in circuit design to our stereo output stages. This design philosophy ensures identical frequency, phase and transient behaviour on all channels, combined with perfectly balanced dynamic characteristics.

The **T+A** surround philosophy also provides further advantages: two separate pre-amplifier circuits are present, each with its own volume and tone control functions: a stereo pre-amplifier and an independent six-channel pre-amplifier in the surround decoder.

It is therefore possible to adjust the levels and tone settings separately to meet the different requirements for stereo and surround modes. When you switch mode, the correct settings automatically take effect.



Dolby Pro Logic IIx Surround

In this process several independent signal channels (left, centre, right and surround (rear)) are recorded using two channels and a special encoding process. Since this process only requires two recording channels, it is compatible with many picture / sound systems which are already widely in use (CD, video recorder, TV etc.).

The information is decoded at playback time and reproduced in the listening room via four (left, right, 2 x rear) loudspeakers, although five speakers (with an additional front centre speaker) are preferable. Dolby Pro Logic encoded material is currently available mainly in the film and video arena, recorded on video cassettes and DVDs, but a large number of television programmes are now being produced and transmitted using Dolby Surround.

DTS Neo:6

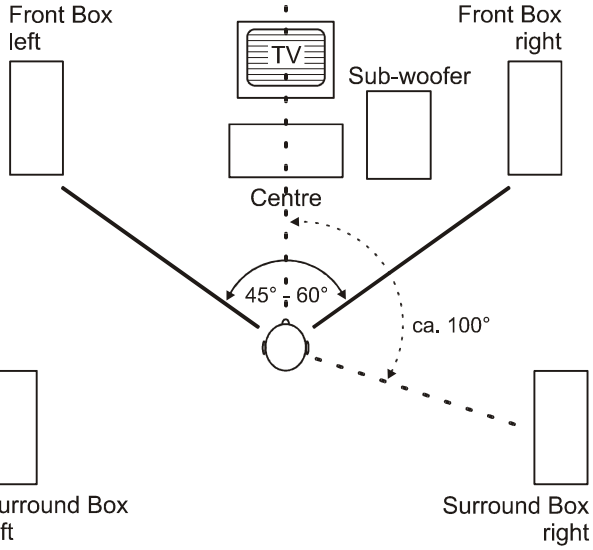
The **DTS Neo:6** process can be used both for encoded stereo material (see Dolby Pro Logic II Surround) and also for un-encoded stereo material.

The Neo:6 decoder generates – according to setting - up to 6 channels (left, centre, right, 2 x side, back centre) from this; the back centre channel can also be reproduced by 2 separate speakers if they are available.

Dolby Digital is a digital multi-channel surround system which was developed specifically for spatial sound reproduction in connection with cinema films. The process utilises five separate sound channels: three front channels (left, centre, right) and two surround channels. A sixth independent bass effect channel is also present, catering for low frequency effects (**LFE**). That is why such systems are said to offer **5.1** channels.

In comparison with Dolby Pro Logic II, Dolby Digital provides two independent surround channels which generate genuine spatial stereo sound, offering the same realistic stereo reproduction as provided by the front channels.

The integral Dolby Digital decoder provides the means of obtaining a genuine digital Dolby stereo cinema presentation in your own living room. The discrete digital recording process and the five playback channels guarantee a very wide dynamic range and accurate spatial orientation.



The dynamic range is the difference in volume between the quietest and loudest passages of a recording. The original soundtrack of a film generally features an extremely wide dynamic range which the surround receiver can reproduce in full.

Unfortunately not all listening rooms, and not all times of day, are suitable for exploiting the full dynamic range. For example, it may be necessary to take your neighbours' feelings into account - especially in the late evening hours.

For this reason it is possible to reduce the dynamic range of Dolby digital encoded sound sources in such a way that quiet passages (e. g. whispered conversations) are reproduced somewhat louder, while loud passages (e. g. massive explosions) are reduced in volume slightly (see '***Main Menu***').

dts Digital Surround

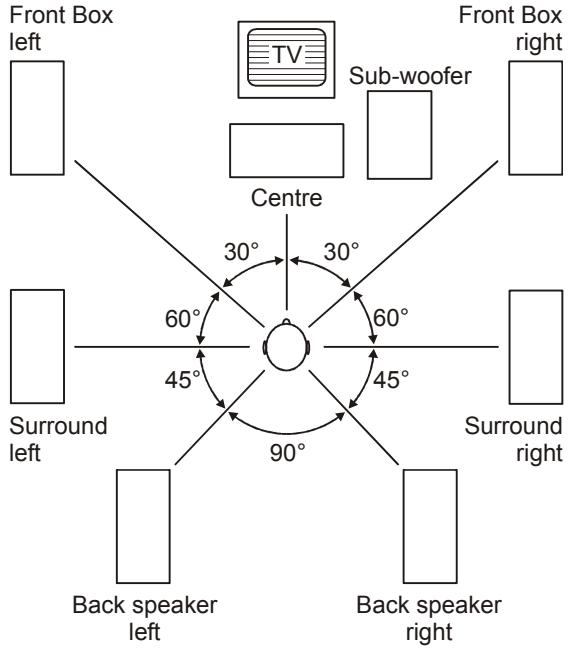
The "**dts**" multi-channel film sound system was originally developed to replace analogue film soundtracks, using digital recordings consisting of six discrete channels. This system has now been further developed to provide spatial sound reproduction in the home situation.

The six channels (**5.1**) are encoded / decoded in original quality, i. e. with 20-bit resolution, and recorded using only slight data compression. The 5.1 loudspeaker configuration, currently the standard arrangement for home cinema systems, is ideal for playback.

Dolby Digital Surround EX

Dolby Digital Ex is an expansion of the Dolby Digital process. In order to optimise the spatial reproduction further, the surround speakers are set up to the sides of the listening position, and supplemented by one or two additional back loudspeakers (if 2 back speakers are used, both of them reproduce the same signal).

Dolby Digital EX generates six full-range channels from the 5.1 signal. This is achieved by a matrix decoder which produces a third surround channel from the two surround channels of the 5.1 signal. Dolby Digital EX works best with film and sound material encoded with extra Dolby Digital EX.



dts ES / discrete

DTS ES is an expansion of the dts digital surround process. The surround loudspeakers are supplemented by back speakers in a similar way to Dolby Digital EX. The sound signal is produced during the decoding process from the surround channels by means of an additional stage.

In contrast, **DTS ES discrete** produces the sound channel for the back speakers from a sixth channel which is recorded completely separately.

STEREO / MONO mode:

Stereo mode for **stereo** reproduction

Note:
A multi-channel signal is converted into a stereo signal (downmix), and reproduced via the main left and right loudspeakers.

Mono mode for **mono** reproduction

All channels are mixed down onto the Centre loudspeaker *).

Mono I mode for **two-channel TV sound**

Generally **Channel I** transmits the synchronised sound. The signal from Channel I is reproduced via the Centre loudspeaker *); **Channel II** (original sound) is suppressed.

Mono II mode for **two-channel TV sound**

Generally **Channel II** transmits the original sound. The signal from Channel II is reproduced via the Centre loudspeaker *); **Channel I** (original sound) is suppressed.

Notes:

*) If no Centre speaker is present (see '***Loudspeaker Menu'***), the Centre channel is mixed onto the left and right main speakers.

Not all signal sources (DVDs, CDs etc.) which are encoded with Dolby Digital or DTS Digital Surround contain the full 5.1 information. Even if the screen indicates that a channel is present, that does not necessarily mean that sound signals will constantly be present at that loudspeaker.

In every mode of reproduction signals can be made available on the sub-woofer channel, depending on the loudspeakers selected in the **'*Loudspeaker Menu*'**.

Sound field simulation

The surround processes already described require programme material which is encoded using the appropriate system, but the **DD 1535 R** also offers a facility to enhance the spatial effect available with conventional unencoded stereo recordings (CD, MC, FM radio etc.).

These **sound field simulations** are based on an accurate analysis of the room acoustics of a number of popular room and hall types.

The digital signal processor of your decoder is capable of simulating and reproducing the characteristic sound of these venues.

For example, if you select the **HALL** setting while watching a rock concert on television, you will have the illusion of sitting in the middle of the audience.

Please note that it is important to set the sound field which is appropriate for the material to which you are currently listening. It makes no sense at all to select a sports stadium if you intend listening to a concert of chamber music, or an intimate club atmosphere for a rock concert.

Your **DD 1535 R** can generate the following sound fields:

Disco

This sound field is particularly suitable for providing an even spread of sound over a dance area. The sound signal is reproduced with equal power by the main and surround loudspeakers, without echo or delay. The strongly concentrated sound produced in this way generates an immediate, energy-charged atmosphere which is a great choice for any party.

Note:
With the Dolby Digital EX / DTS ES decoder the signal is also reproduced by the centre and back speakers.

Hall

A resonant concert hall with reflections from all directions. Ideal for reproducing a large orchestra, or the live atmosphere of a large rock concert hall - an excellent choice for highly dynamic rock music.

Opera

This program combines the complete spectrum of clear voice reproduction with the full sound reproduction of an orchestra, without any unnatural echo. For better orientation the room sound is restricted slightly towards the rear.

Arena

Sound image with a narrow presence in the front region. Commentators and dialogues are localised on the screen. The rear resonance provides the impression of the public in the stadium. This sound field is also suitable for TV shows and music transmissions.

Club

The characteristic cellar jazz club atmosphere, with a pattern of sound reflection which is dominated by large floor and wall surfaces. Also good for simulating small halls.

Church

Simulation of the acoustic conditions of a large church with a long resonant period. This sound field is the perfect choice for sacred organ music.

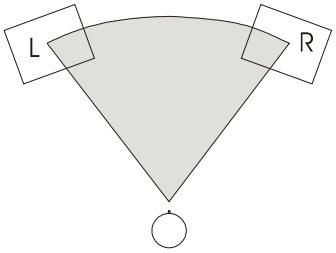
MCH-IN

If the MCH-IN input is assigned to the active source. In this case the sound signal of the Multi-channel input is used.

Dolby Headphone

Dolby Headphone is a system which provides a form of spatial sound image even with conventional stereo headphones.

Method of working:



When a stereo signal is reproduced via two loudspeakers set up in front of the listening position, the listener perceives the music to be spread out over the area between the right and left speakers, rather than directly from the two loudspeakers themselves.

The sound image appears in this way because of sound reflections: the sound from the front speakers reaches the ears directly, but is also reflected around the room, and by the listener's shoulders and head.

The effect is amplified by the fact that the sound from the right-hand speaker reaches the left ear as well as the right ear (and vice versa), albeit with a slight delay.

The net result of these two processes is that it is possible to locate individual sound sources spread out across the front of the listening area.

If we attempt to reproduce the same signal using conventional headphones, the sound from each channel reaches the associated ear of the listener, but not the opposite ear. Furthermore the reflections in the room and the shoulder area of the listener simply do not occur.

The result of this is that the music reaches the listener directly from right and left, and therefore seems to come from inside the head rather than being spread out in front.

This is the reason why many people find headphone listening an unnatural experience.

Dolby Headphone is a process by which the music signal is processed to simulate the characteristics of music reproduction in a normal room; the result is that an approximation of the usual listening experience is possible even using headphones.

Dolby Headphone goes even further than this, and incorporates the rear channels which are present in 5.1 / 7.1 material, providing a genuine cinema-like atmosphere even with conventional stereo headphones.

Three different types of room can be selected, so that the listener can match his or her personal preference to the type of music signal being reproduced:

- DH1 (reference room): small room with pronounced acoustic damping;
- DH2 (living room): small room, but with less pronounced damping;
- DH3 (large room): larger room with more diffuse sound distribution.

Loudspeaker configurations for the DD 1535 R

The **DD 1535 R** features a digital decoder which is capable of decoding all sound formats currently in use. The output can be via a stereo speaker pair, a three-channel (stereo + centre) set or a 5, 6 or 7-channel surround loudspeaker set.

Regardless of the loudspeaker configuration you use in your home, the **DD 1535 R** ensures that no recorded sound information is ever lost.

For example, if a 6.1 recording is played back using a 3.0 loudspeaker set (front left, front right, front centre), the **DD 1535 R** mixes the rear channel information onto the loudspeakers which are actually present, maintaining correct levels and phase. The information of the LFE (Low Frequency Effects) channel, i. e. of the 1. channel, is also mixed onto the channels which are present. You therefore hear everything contained in the original recording. However, if rear speakers are not present in your system, the surround effects cannot be reproduced. You therefore do not sit in the middle of events, but more as if in a theatre in front of an acoustic stage, on which the action takes place.

For the genuine surround experience you require at least a 5-channel loudspeaker set - with or without a sub-woofer.

To ensure that the **SR 1535 R** is able to distribute the information in all recordings correctly to your individual loudspeaker combination, it is important that you enter the correct settings in the Loudspeaker Configuration menu when installing your system, i. e. which loudspeakers are present and connected, what size they are, and how far they are located from the listening position. It is also essential to calibrate the loudspeakers so that they reproduce the signals at exactly the right volume. This ensures that sound effects take place exactly at the position intended by the film director. With the loudspeaker con-figuration menu you can also compensate for differences in sound between individual loudspeakers, e. g. when speakers have to be set up in the corners of the room. To simplify the speaker configuration process as much as possible the **SR 1535 R** features an **'Assistant'** which carries out most of the work for you fully automatically, i. e. level calibration, tone settings and speaker distances (see the chapter **'*Auto Setup*'**).

Picture norms, connecting AV devices to the DD 1535 R

There are several different picture norms designed for transferring video data. The most common ones are: Video (also sometimes referred to as FBAS or CVBS), S-Video (also known as Y/C or S-VHS) and Component Video (common abbreviations YUV, Y Pb Pr or Y Cb Cr).

Video is supported by virtually all source devices, TV sets, monitors and video recorders. It is therefore the most universal method of connecting video devices to each other, but unfortunately also provides the worst quality of all.

S-Video offers a significant improvement in picture quality over Video. If monitor and source device permit, the S-Video connection should always be preferred.

The absolute best picture quality is obtained using Component Video. However, Component Video is not supported by video recorders, and only a few TV sets feature the appropriate inputs. Component Video is primarily used to connect DVD players to high-quality projectors, or other large-format monitors.

The **DD 1535 R** offers sockets for all three video norms listed above. It can also convert Video into S-Video, and S-Video into normal video signals. As the owner of an **DD 1535 R** you therefore do not need to limit yourself to standard Video as the “lowest common denominator” for all your video equipment. You can connect any devices to the **DD 1535 R**, no matter what the picture norms, and use them together. The **DD 1535 R** always automatically sets the best possible connection between source, monitor and video recorder.

With its integral norm converter the **DD 1535 R** automatically ensures that, for example, a normal video signal is fed to a standard video recorder when making a recording, even if the source device generates S-Video signals. With the **DD 1535 R** this also works the other way round: if you own an S-Video recorder, the **DD 1535 R** always ensures that an S-Video recording signal is available for it - regardless of whether the source device supplies an S-Video signal or only a standard Video signal.

The **DD 1535 R** also carries out a norm conversion for the video monitor connected to it. Regardless of what your source device generates, the correct video signal is always available for your monitor.

To ensure that the **DD 1535 R** is able to manage the various picture signals correctly, it is essential to enter the type of signal - Video or S-Video - which the source device supplies when you are installing each device to be connected to the machine (see the chapter **'*Configuration / Video Inputs*'**).

Available as an option: YUV converter module

The YUV converter module converts all Video and S-Video input signals to YUV output signals. If this module is present, all video signals are sent as YUV signals to the monitor and the additonal Video / S-Video cables to the monitor can be omitted. For details about the YUV converter module ask your **T+A** dealer or distributor.

Auxiliary YUV sockets

If your video monitor features a YUV input, you should connect the monitor and all YUV-capable source devices using YUV cables *in addition to* the Video or S-Video wiring. You can then switch your monitor to YUV mode when using these sources, and in this way obtain the absolute best possible picture quality when watching a film. The YUV module of your **DD 1535 R** features a signal bandwidth of 350 MHz, is absolutely loss-free, and is therefore prepared for future high-resolution video standards (HDTV).

When installing a device, a YUV input of the **DD 1535 R** must be assigned to each YUV source device connected to the system (see **'*Wiring Diagram 4*'** and the chapter **'*Configuration / YUV Inputs*'**).

Note:

Even if you own YUV-capable source devices, you still need to connect standard Video or S-Video cables, as these signals are essential for video recordings

Recording with the DD 1535 R

Picture norms

To make recordings using a video recorder the source device from which the recording is to be made must be connected to the **DD 1535 R** using either a Video or S-Video lead. It is not possible to make recordings from source devices which are connected solely using a Component input, as video recorders are not designed to handle Component signals.

Selecting the recording source

To select the source device from which the recording is to be made, press the REC button under the front flap of the **DD 1535 R**. While you hold the REC button pressed in, you can select the source device you wish to use by means of the source buttons.

Trouble-shooting

Many problems have a simple cause and a correspondingly simple solution. The following section describes a few difficulties you may encounter, and the measures you need to take to cure them.

If you find it impossible to solve a problem with the help of these notes please disconnect the unit from the mains and ask your authorised T+A specialist dealer for advice.

Service Menu

The operation of the service menu is similar to the operation of the setup menu (see chapter **'*Menu control system*'**).

Display Service Menu

First display the software version number:

- Switch on the machine.
- Wait until the screen displays the loudspeaker symbols.
- Hold the (⏮) button on the front panel pressed in (approx. 2 seconds).
- The software version number **'*VX-XX*'** and the DSP version number **'*XXX*'** of the machine are now displayed on the integral screen.
- When the software version has been displayed, hold the (SETUP) button on the front panel pressed in. The integral screen now shows the message **'-----'**, and the TV screen displays the **'*Service-Menu*'**.

In the **'*Service-Menu*'** the following items can be adjusted:

- Reset to factory default settings
  Choose **'*RESET YES*'** and then press the (OK) button and keep it pressed for a couple of seconds.
- Selection of the video standard. Choose between PAL and NTSC according to the requirements of qour TV set.
- The menu item **'BACK'** should always be set to **'*BACK*'**. The **'*ZO-2*'** setting is only for service tests.

Switching the remote control address

DD 1535 R:

Proceed as described above (see chapter **'*Service-Menu*'** until the software version is desplayed.

While the version no. Is displayed on the VFD display press the (SRC MENU) button until *RC-ADR 1* or *RC-ADR 2* is displayed. This switches the machine to the displayed address.

To switch back to the previous address, switch the machine off and repeat the procedure described above.

Remote control handset:

Hold the (OK) button and the numeric button (3) pressed in simultaneously. After about ten seconds the LED starts to flash. Now press the numeric button (1) or (2).

Pressing the numeric button (1) sets the remote control system to the normal address (*RC-ADR 1)*, whereas numeric button (2) sets the alternative address (*RC-ADR 2)*. The LED goes out to confirm that the switch has taken place.

Problem:	**Machine does not switch on (green LED does not light up).**
Cause:	Mains lead not plugged in correctly.
Remedy:	Check connections, push plugs in firmly.

Problem:	**Machine does not respond when buttons are pressed.**
Cause:	Static discharge or powerful interference (e. g. lightning) have corrupted the processor memory.
Remedy:	**Reset machine**: disconnect mains plug, wait about 10 seconds and re-connect. Switch unit on again.

Problem:	**The menu control system does not work.**
Cause:	Master unit software is not designed for decoder operation.
Remedy:	Software update required in master machine; ask your specialist T+A dealer.

Problem:	**Machine responds correctly to manual operation of the buttons, but does not respond to remote control commands via the 'R'-series pre-amplifier, integrated amplifier or receiver.**
Cause 1:	Incorrectly inserted batteries or flat batteries in the remote control handset.
Remedy:	Re-install batteries correctly or fit new ones.
Cause 2:	Remote control handset set to the wrong address.
Remedy:	Set the correct remote control address on the handset (see chapter **'*Switching the remote control address*'**).
Cause 3:	No visual contact between remote control transmitter and remote control receiver attached to the **'R'**-series pre-amplifier, integrated amplifier or receiver.
Remedy:	Ensure direct line-of-sight contact between remote control transmitter and receiver. Note that glass doors may prevent the system working properly. Maximum range between transmitter and receiver approx. 8 metres. Position the receiver in such a way that it is not subjected to direct sunlight or strong artificial lighting. Fluorescent and energy-saving lamps are powerful sources of interference.

Problem:	**Loud humming noise from the loudspeakers.**
Cause:	Poor contact between the Cinch plugs and sockets, or a faulty Cinch cable.
Remedy:	Please check all connections and cables thoroughly.

Problem:	**No sound, or distorted sound.**
Cause:	Incorrect audio connection to amplifier or TV set.
Remedy:	Check connections against wiring diagram; push all connectors in firmly. Select a different listening source when checking the amplifier.

Problem:	**No sound from center, or center sound signal too quiet.**
Cause:	Center speaker not connected, but activated in **'*Speaker Setup*'**.
Remedy:	Connect center loudspeaker, or disable center speaker in **'*Speaker Setup*'.**

Problem:	**No sound from individual loudspeaker.**
Cause 1:	Loudspeaker not activated in **'*Speaker Setup*'**.
Remedy:	Call up **'*Speaker Setup*'** and enter the type of loudspeaker connected.
Cause 2:	Loudspeaker cable not connected correctly, or short-circuit in speaker cable.
Remedy:	Check connection and speaker cable, correct if necessary.
Cause 3:	Decoder not set to surround mode.
Remedy:	Call up **'*Main Menu*'** and set to 'SURROUND' or one of the sound fields.
Cause 4:	Programme contains no information on the auxiliary channels (e. g. stereo material).
Remedy:	If you wish, call up the **'*Main Menu*'** and select a sound field.
Cause 5:	The level for the channel affected is set too low.
Remedy:	Call up **'*Speaker Balance Setup*'** and raise the level.

Problem:	**No bass, or inadequate bass.**
Cause 1:	No subwoofer connected, but activated in **'*Speaker Setup*'**.
Remedy:	Connect subwoofer, or disable subwoofer in **'*Speaker Setup*'**.
Cause 2:	Size of loudspeakers entered incorrectly in **'*Speaker Setup*'**.
Remedy:	Call up **'*Speaker Setup*'** and check that settings match the loudspeakers in your system; correct if necessary.

Problem:	**Subwoofer only works in surround mode.**
Cause:	Subwoofer lead to stereo amplifier output absent, or not correctly connected.
Remedy:	Connect subwoofer correctly, push connector in firmly.

Problem:	**'*Main Menu*' not displayed on the television screen.**
Cause:	Screen display of **'*Main Menu*'** switched off in ***'Configuration Menu'***.
Remedy:	Call up **'*Configuration Menu*'** and switch on 'on-screen Menu'.

Problem:	**No picture from some or all source devices.**
Cause:	Source devices not supplying the switch voltage which the TV set requires to switch over to AV mode.
Remedy:	Set television to **'constant AV operation'** mode.

Problem:	**Neither on-screen menu nor other external programmes appear on the TV screen. TV only shows those stations which are received via its own aerial.**
Cause 1:	Video lead not connected properly.
Remedy:	Push in all connectors firmly.
Cause 2:	The TV set does not switch automatically to the AV input.
Remedy:	Set the TV set to **'AV operation'** mode.

Problem:	**Picture unstable.**
Cause:	Synchronisation signal absent.
Remedy:	Push connector in firmly, or set television to **'AV operation'** mode.

Problem:	**Monochrome picture only.**
Cause:	Incompatible picture norms set on the TV, the decoder and the source device.
Remedy:	Set TV, decoder and source device to the same picture norm.
Note:	If problems persist, set the decoder to the **'RGB / Video'** norm; select the picture norm **'Video'**, occasionally also termed **'FBAS'** or **'Composite'**, on the TV set and the source device.

Problem:	**Nothing on the decoder screen.**
Cause:	The screen is switched off.
Remedy:	Switch the screen on again in the '***Configuration Menu***'.

Problem:	**When playing an NTSC-DVD the on-screen menu is distorted.**
Cause:	The TV set does not feature automatic format detection for NTSC, and has been set manually to NTSC. The **SR 1535 R's** on-screen menus are only generated in PAL format, so this operation is not possible.
Remedy:	Use a TV set with automatic PAL / NTSC format switching, or use the surround receiver's integral screen.

Problem:	**Picture correct, but no sound audible through the decoder.**
Cause 1:	No sound connection between source device and decoder.
Remedy:	Complete the sound connection (analogue or digital depending on mode); see section entitled '***Installation, wiring and using the system for the first time***'.
Cause 2:	No sound input, or the wrong sound input, has been assigned to the picture input in the '***Source Setup***'.
Remedy:	Check the sound input to which the source device is connected. Call up the '***Source Setup***' and carry out the correct assignment.
Cause 3:	The loudspeaker is switched off.
Remedy1:	Switch on the loudspeaker using the (A) button.
Remedy2:	Check that the decoder has not switched itself off due to overheating or a short-circuit in the loudspeaker connection.

Problem:	**When you switch television programmes, you hear unwanted noise.**
Cause:	The television set is not capable of muting (silencing) the SCART audio outputs.
Remedy:	Connect the audio output (Cinch sockets) on the TV set to the pre-amplifier's **TV** audio input. In the AUDIO column of the '***Inputs Menu***' you must now select **TV** instead of **TASI**!
Note:	This variant on standard wiring is possible with all source devices for which a corresponding pre-amplifier input is available.

Problem:	**Decoder switches off after a certain period of operation.**
Cause:	Unit is overheating.
Remedy:	Make sure that the cooling airflow is adequate; reduce volume if necessary.

Glossary

AV source device
A source device which supplies sound and picture signals. The sound signals may be generated in analogue or digital form.

Center
Front loudspeaker between the two main speakers, located below or directly adjacent to the TV set.

dB
The unit of measurement for electrical levels is the **d**eci**B**el (dB).

DSP (Digitaler **S**ignal **P**rocessor)
The digital surround decoder employs a fully programmable signal processor. A DSP can process signals using a program stored in the program memory. The program can be updated at any time, which means that the decoder can be kept abreast of new developments.

Front-speaker
Front pair of main loudspeakers, set up to left and right of the television set.

Surround-speaker
Rear pair of loudspeakers, set up behind the listening position, designed to provide spatial sound effects.

RLINK
Universal control interface by means of which all the components of a **T+A** system communicate, provided that they are fitted with an **R**LINK control socket.

RGB
High-quality picture norm, utilising separate wires for the colour signals **red**, **green** and **blue**. This avoids the problem of signal contamination; **RGB playback provides the best possible picture quality.**

SCART
Widely used standardised connection using a 21-pin connector. SCART leads can transfer all picture norms and additional control signals (e. g. for 3:4 / 16:9 picture format switching). Adaptors are available in specialist shops for connecting a SCART socket to other standard connectors (Cinch or Hosiden).

STANDBY
The digital surround decoder can be switched on from stand-by mode at any time by pressing a button on the remote control handset.

Subwoofer
Loudspeaker designed for reproducing low bass signals. It is used for special deep bass effects which are encoded on the LFE channel in Dolby Digital and dts material. When combined with small satellite speakers they also provide a full-range bass response.

S-VIDEO
High-quality picture norm with separate brightness and colour signals. Better picture quality than standard video. However, as the colours are not transmitted separately, picture quality is not quite as good as with the RGB method.

TASI
This standard **T+A** interface makes it possible to loop a **T+A** surround decoder between the source selector switch and the volume control of the stereo amplifier. The interface automatically detects the decoder when it is connected. In surround mode the volume and tone controls of the stereo amplifier are disabled, as these functions are assumed by the decoder.

Update
Method of bringing the software used by the decoder's main processor or signal processor abreast of new developments. Updating the software provides for future expansion of functions and changes to meet new requirements.

VIDEO
Standard picture norm: colour and brightness information is transmitted by a single conductor. Standard video connections are present on all AV devices.

YUV
High-quality picture norm, whereby the different colour components are transferred using separate cables, in a similar way to RGB.

Specification

Type	5-channel amplifier 7.1 digital decoder
AV inputs	7
Of which recorder	2
Audio inputs	max. 8 (TASI)

Digital decoder

Formats	7.1 Dolby Digital / EX / dts / ES / ES Discrete ProLogic II / ProLogic IIx / dts NEO:6 Dolby headphone
Sound field programs	7
Two-channel sound / mono	
A/D converter (bit / rate)	24 / 48 kHz
D/A converter (bit / rate)	24 / 192 kHz
Freq. response	1 Hz – 22 kHz
THD	0,004 %
S:N	106 dB

Pre-amplifier

Freq. response	1 Hz – 400 kHz
THD	0,002 %
S:N (A)	107 dB
Volume control type	Analog
Step	1.5 dB

Power amplifiers

No.	5
Nom. output / channel 4 Ω / 8 Ω	150 / 110
Peak output / channel 4 Ω / 8 Ω	250 / 170
Damping factor	> 500
Slew rate	60 V / µsec
Reservoir capacity	50000 µF
Mains 115 / 230 V, 50 / 60 Hz	600 VA

Standard accessories:	Mains lead, Video lead, TASI lead, subwoofer lead, **R**LINK lead, operating instructions, guarantee certificate
Optional accessories and expansion units:	Interconnect and loudspeaker cables, connectors, rack systems, matching design

We reserve the right to alter specifications.

T+A elektroakustik GmbH & Co. KG

Herford

Deutschland * Germany